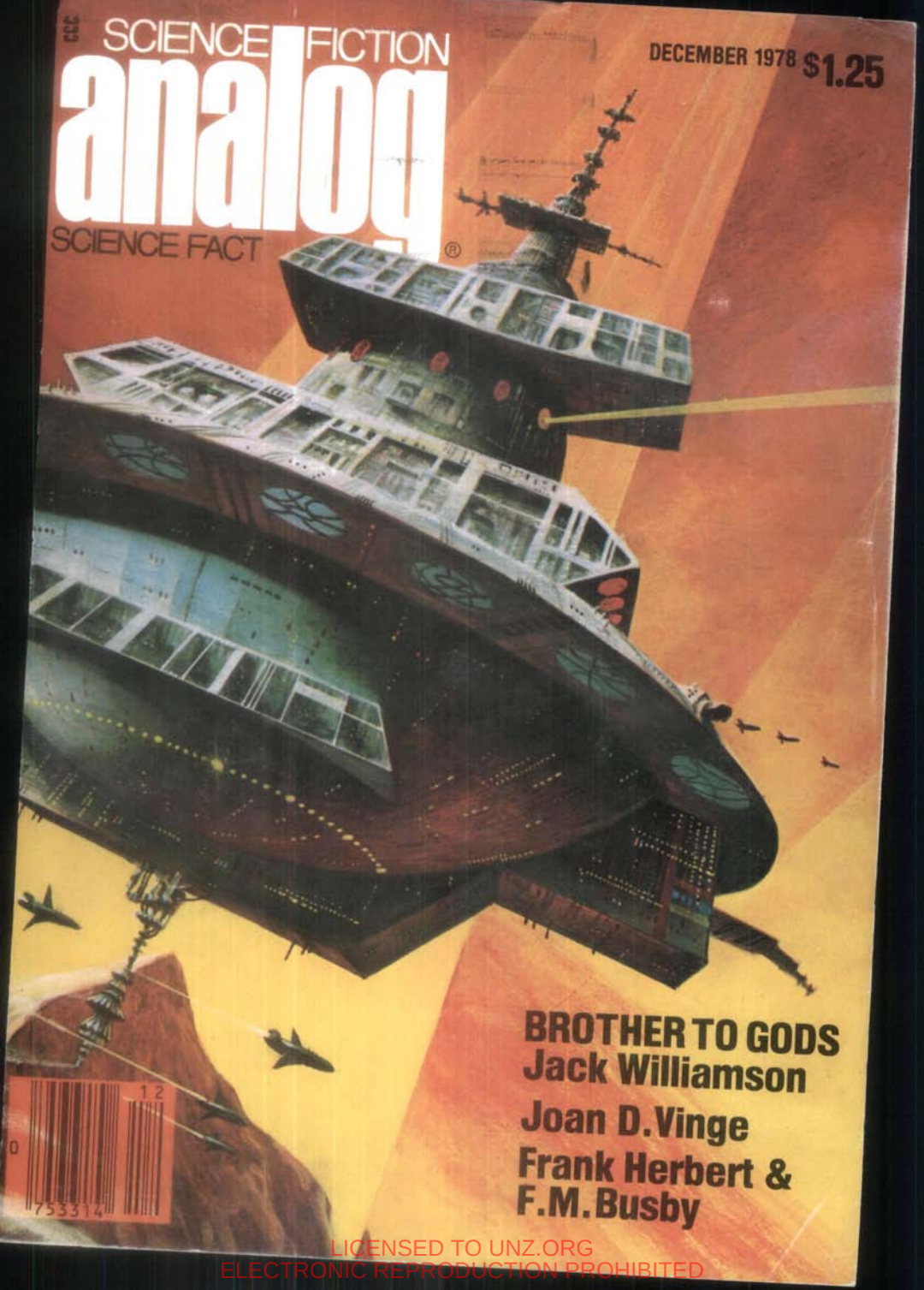

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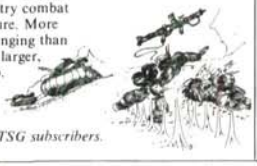

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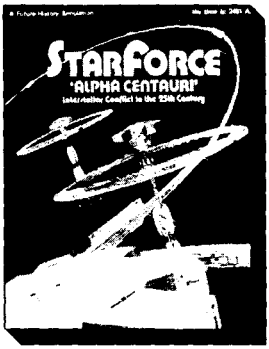

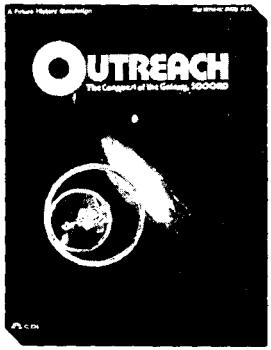

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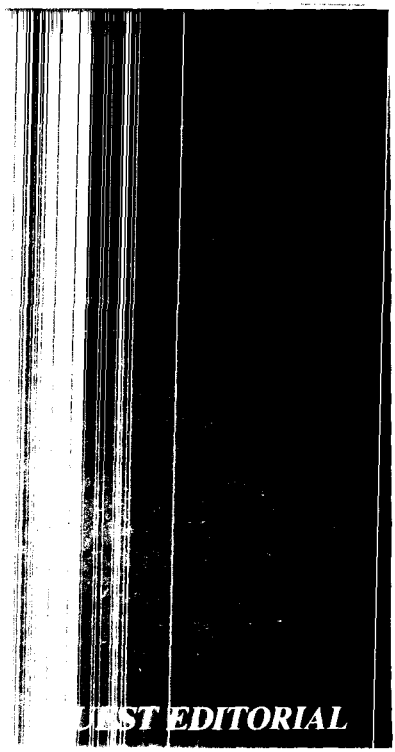

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being one of the toughies,
e booing. The audience was
ung fans who believed in the
ur ice and who had fought

to get America out of Vietnam so we could have a peace in which Vietnamese and Cambodians killed each other. They booed Heinlein, it seemed to me, because they had a religious faith in his age and wisdom and power. He had created universes with his prose and therefore he was a god to them. They really believed that if they could only convince their god to bellow, "*Let war be abolished*!" then the terrible power of his words would end war forever.

Perhaps Heinlein overstated his case. Always is a long time. He was just saying that "the war to end all wars" doesn't work, that the best you can do is fight "the war to end *this* war," that nobility and compassion and honesty and all the other virtues known to man aren't enough. He was telling us about original sin which youngsters never understand and old men continually rediscover.

Unbeknown to those idealistic fans, at the very moment they were refusing to listen to their hero, the forces of evil were well along in plotting the first

The first space war

DONALD KINGSBURY

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space war. That was 1976. Today the initial battles have already been fought, brutal, horrible battles with thousands of dead and wounded.

It wasn't like anything I ever imagined. My first SF story was about space war, back in the days when the V2 was the most lethal rocket and A-bombs were too heavy to be carried by rocket. The story was an adaption of the "high ground" idea—a military base on the Moon could command any point on the Earth with A-bomb armed V2s, but the Earth couldn't reach the moon with V2s. Naive. Ben Bova gives us an interesting insight into near future space war in his fast paced *Millennium*. Space war has been examined from thousands of viewpoints by thousands of writers. None of us guessed the way it would really happen, on the ground.

Standard space war opening gambit: destroy the enemy's spaceport.

Businessmen in the West, who have been unfavorably impressed by the inefficient way both socialist and capitalist governments have spent their people's space program money, have been looking at ways to break the NASA monopoly. Government monopolies, being subsidized, are not easy to break. It can be done. We already know how to do better than NASA does on hardware costs, and considerably better than NASA does on administrative costs.

The most successful challenge has come from the West German firm OTRAG—Orbital Transport und Raketen Aktien-Gessellschafft—headed by Lutz Kayzer, a German aerospace engineer, and Kurt Debus, former head of Kennedy Space Center. They are using a modular, noncryogenic approach. The mass produced rocket module (Dornier) consists of four tanks and four clustered engines (Messerschmidt) each generating three tons of thrust from the nitric acid and kerosene propellant. The modules can be strapped together in many different combinations for different missions. OTRAG naturally needed a spaceport.

The equator has never been one of man's most culturally or militarily active areas. Only twenty percent of it passes through land—Ecuador, upper Brazil, Zaire, Uganda, Kenya, Sumatra, Borneo. The movement into space has suddenly given these locations a new strategic importance as launch sites. The reasons for this are several. (1) A launch from the equator gives us a free 464 m/sec boost—50 m/sec more than say a higher location like Cape Canaveral. (2) Many of the most desirable satellite orbits are equatorial and an equatorial launch significantly decreases the necessary maneuvering to achieve such an orbit.

In 1976 OTRAG negotiated with Zaire to lease a rocket range in Shaba province—between Lake Tanganyika in the east and a north-south line at 26° 55′ of longitude in the west; by the river Lukuga in the north and the tenth parallel in the south. Since then they have built a launch site and, from it, successfully tested a prototype of their module on May 17, 1977. By

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1981 OTRAG expects to be able to put ten tons into a 300 km orbit, or 1.5 tons into geosynchronous orbit at very competitive prices.

The Soviet Union has been extremely upset about this effort ever since its inception. A strongly worded protest was delivered by the Soviet ambassador in Kinshasha to the Zairian government. It scares the hell out of Russian bureaucrats that on a capitalist Earth anybody can walk into Zaire and, at bargain basement prices, buy a *German* spy satellite to fly over Russia and take pictures of their insane asylums full of dissidents. It makes these monopoly socialists insecure to see space technology filtering down to the masses. The bungling American government can be negotiated with, but how do you negotiate with the masses? You can't run around all over the world doing Czechoslovakias. They see savage black men with cheap ICBMs resenting socialist missionaries. It is enough to terrify a czar

That OTRAG is not in the spy satellite or ICBM market and intends to sell such things as communications satellite launches to Third World countries who as yet can't afford NASA, makes not one whit of difference. Such dangerous capitalist adventurism with rocket proliferation must be stopped. And in 1976, the Soviet Union, vodka drunk on their successful rampage in Angola, saw a way. Russian imperialism, to adopt a Chinese phrase, has its running dog lackeys.

What exactly transpired is not clear at this writing. According to the experienced British correspondent, Colin Legum of the Observer, not the Cubans, but the East Germans were assigned the task of defeating the Germans in Zaire. The problem was discussed during secret meetings at the ninth congress of the East German Communist party in East Berlin during May 1976, attended by both Russian and Angolan military delegates. If Zaire was politically destabilized, then any space oriented activity would become economically impossible to maintain. To hell with the Zairian workers and peasants. If possible, the Zairian government was to be replaced by a government friendly to the Soviet Union.

On a continent so recently divided into warring tribes and scarred by European exploitation, it is still easy for white men to set black against black by playing on ancient and recent antagonisms. The majority of the first crop of liberationist African leaders have shown a tragically limited sense of power. Power is for their own personal glory. They have become the new colonialists with contempt for the one-man one-vote principle on a level with South Africa. Which black leaders respect the black vote? Damn few. They have preferred genocide and terror as a method of controlling the opposition. A black tyrant is the moral equivalent of a white tyrant.

Let us examine the origin of the antagonism between Zaire and Angola which was exploited by the Russians. The original Angolan liberation move-

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ment, the FNLA, was founded by Holden Roberto in 1961 when he had about 7000 guerrillas under his command. Roberto was a personal friend of President Mobutu of Zaire and was supplied from and based in Zaire. In the initial fighting the crack Portuguese troops decimated the FNLA but did not destroy it. A new movement, the MPLA, was founded in 1969 and was supported by the Cubans from its inception. In the south Jonas Savimbi's UNITA was making great progress.

By 1975 when the Portuguese fled from the country in disarray, the FNLA, representing about 35% of the country, controlled the north and had the best equipped army. The MPLA, its army equipped by the Cubans, controlled central Angola and about 20% of the population. UNITA controlled the south and 45% of the people and had the least equipment, being the army that had learned best how to live off the land and off local support.

Jurisdictional disputes arose. Selfish and shortsighted rivalry among all the Angolan leaders created a situation in which black began to kill black. It was civil war. The Organization of African Unity, an impotent coalition of 46 African states reflecting the current quality of African leadership, made feeble attempts to negotiate a settlement. The attempts failed. "The implication of that failure was ominous but clear. It meant that the issue was to be settled not by compromise but by a trial of strength between the parties," said Ralph Uwechue in a February 1976 editorial in the magazine *Africa*. "Predictably that vacuum has sucked in ever-ready interlopers with the threat of turning Africa into a battleground for super-power rivalry."

As we now know the Angolans never did get to decide their own fate. Their revolution was aborted. The CIA made an unusually inept entrance into the battle with stupidly covert maneuvers that wouldn't fool a child, like buying surplus Russian missles in Israel for the FNLA. Cuba began to pour in troops to support the MPLA, and South Africa managed to discredit UNITA by sending its troops through UNITA territory.

Good socialists, as the Chinese have commented, would have brought the three guerrilla groups together. Instead Cuba imposed an imperialistic solution by annihilating, not the Portuguese overlords, but the black servants, among them the original rebels who had been supported by Zaire. Batista would have understood. Agostinho Neto, leader of the MPLA, has become a puppet by choosing force rather than persuasion to convince his fellow blacks. The fact that he cannot survive without his Cuban troops gives you some idea of his popularity among the blacks he controls.

During the civil war some Lunda tribesmen exiled from Shaba by reason of previous failed coups and thus having no love for Mobutu sided with the MPLA and held the strategic town of Henrique de Carvalho against the FNLA. Later with the aid of the Cubans and under the leadership of Na-

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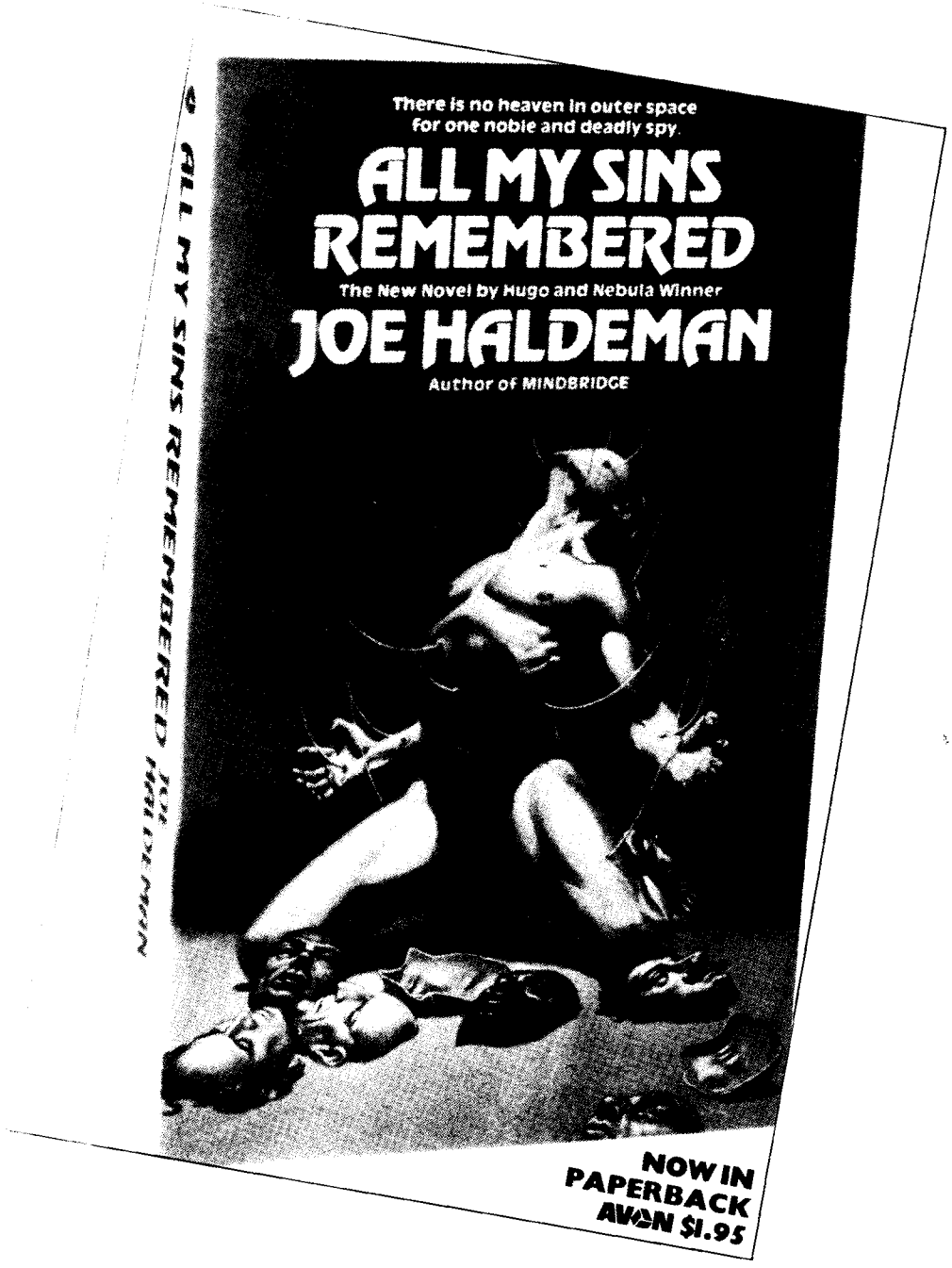
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thaniel Mbumba they participated in the mop up operation against the FNLA. Thus Neto not only had a grudge against Zaire for supporting the FNLA but a debt to Zaire's most vocal enemies. Such quarrels are grist for Russian morality. The stage was set for a miniwar.

Cooperation between the Angolans and East Germans began early. The ninth congress of the East German Communist party in 1976 was attended by an official Angolan delegation led by Comandante Pedro Tonha, the governor of Huambo province. He had several meetings with Lieutenant General Helmut Poppe who seems to have been assigned the task of impeding OTRAG by East Germany's defense minister General Heinz Hoffmann. Since then, according to Colin Legum, "an estimated 100 East German military experts have gone to Angola to train the Front for the National Liberation of the Congo (FNLC) and plan its military strategy."

From May 8 to May 12, 1978 General Hoffmann was leading a military delegation in Angola. Their main visits were to the Angolan military bases at Luso, Texeira de Sousa, and Henrique de Carvalho, bases close to the border. On May 13 the FNLC struck across the border into Zaire.

The battle at Kolwezi was senseless. It began in the morning with the massacre of men going to work, black men and white men. Women and children were killed. There was rape and looting, and sabotage whose only purpose was to wreck the Zairian economy. "I saw three Katangans rape a 10 year old girl in the presence of her parents and three brothers," said Jean-Marie Lallemand, a 31 year old French survivor. "People were beaten before they were killed. It was horrible." A week later bodies still littered the streets and there was imminent danger of typhoid and cholera as the French paratroopers cleaned out the attackers.

It is ironical that the Russians, still afraid of the Germans, have supported Germans in the holy name of socialism to train an army which when it struck has done so with all the undisciplined brutality of an SS brigade shooting Russian children for target practice.

Four days after the attack Fidel Castro, who has little interest in rocket politics, informed the United States that he had learned early in April of plans by the insurgents to invade Shaba and had tried unsuccessfully to stop the invasion. What this probably means is that the Cubans had a disagreement with the Russians and voted against the attack but took no *action* to stop it. Then, after the full horror of the operation dawned on them, they wished to be dissociated from it since their good name is closely linked to Angola. Like the Americans in Vietnam they like to be remembered for their doctors and agricultural experts and not for their massacres of blacks.

The Zairian economy has been severely damaged and blacks thrown out of work and into misery by Soviet socialist realism. The OTRAG launch

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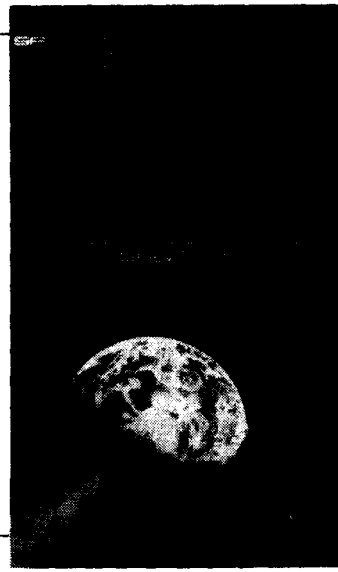

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site survives but it will have a harder time attracting European workers and if the hit and run war continues, may not be able to function. Neto has promised to disarm the FNLC but he is only a puppet.

I doubt that the Katangans knew they were mercenaries drafted into the first space war—dupes who respond to offers of rape and loot and power are seldom politically aware. Mbumba, of course, claims to be a paragon of virtue and therefore deserving to replace the "corrupt" Mobutu. But the East Germans who were there knew what they were doing. Marx was a noble man—and his socialism has produced, among other things, Helmut Poppe, aware war criminal of the most disgusting kind.

It is an old story. That's what Heinlein was saying. No matter how noble you are, your followers *can* be corrupted. Jesus Christ was a noble man—but that did not stop Christianity from conceiving and executing the Inquisition. Kolwezi is part of the long tradition of man's inhumanity to man carried out in the name of virtue.

Will there be peace in space? Not if we are already fighting over spaceports on the most bestial level. Not in your lifetime. Weapons will protect the spaceports and weapons will follow the colonists. Someday it may be different, but today an old old saying still applies: the man who is unwilling or unable to fight is the man who will have to do most of the fighting and dying. ■

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brother to GODS

Is there a purpose to evolution beyond mere survival?

JACK WILLIAMSON

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At first I was afraid.

"It's criminal." The biting acid-and-ether reek and the bright aseptic whiteness of the genetics laboratory, the soft quick pulse of a cryogenic pump, the dark male dynamism of Adam Smithwick himself—those are things I'll never forget. "You—we could be hanged."

He laughed.

"The creationists will certainly hang us." His mellow boom was almost genial. "If they ever guess. Those bigots who hold that creation was done in six miraculous days. They don't like us starting all over again."

"Couldn't they—couldn't they just possibly be right?"

It was all too new and strange for me. I was still the green graduate student, dazzled with his vision of the ultimate adventure. He was the distinguished geneticist, crowned with international fame, three times my age. His very presence took my breath. His abrupt proposal, the evening before, had caught me quite unready.

"Marry me, Cyn. We'll work well together."

When I whispered that I must think about it, he gave me his first wife's diary. Reading through it, I got no sleep that night. At first just another lab assistant, Nadya Barov must have begun as utterly innocent as I was. I shared her shock when she found that he was other than human, felt her sick outrage when she learned that her own children had been his risky genetic experiments, endured the cruel conflict of love and hate that drove her at last to suicide. Coming back to him that morning, I too had been torn between horror and a dazed admiration.

A Greek god—she had called him that in the diary, before she knew the truth. I felt the fit of it. Tall and athletic, with sleek black hair and bold greenish eyes, he wore his sex like a scent, with an intellect vast enough to match his ruthless magnetism.

"Well, Cyn?"

Before I could speak, his probing mind had read all my fears and my unspoken fascination. Unexpectedly, he swept me into his arms. Shattering glassware jangled on the floor. With half my spinning wits, I knew that his hard kiss was too deliberate, a stimulus skillfully applied. Yet I couldn't help responding.

"Please—professor!"

When I could, I pushed him away. Trying to get my breath, to cope with his elemental power and my own hot emotion, I put a work table between us and tried to challenge him with those hard questions that had been fatal to Nadya. His reckless laugh had frightened me again.

"Are you a god?" Put that way, the issue sobered him. "What right have you to tamper with humanity?"

"What is right?"

He didn't wait for my reply.

"What is wrong? The creationists have their answers, graven on eternal stone. Mine are operational. The good is anything that aids the survival of the group—the family or the nation or the race. Ultimately, it is anything that

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assures the survival of the genes. Evil, then, is whatever obstructs that genetic stream. In general, wrong springs from the selfish will that puts individual impulse or passion above that genetic imperative. Think about it, Cyn."

He reached for me across the work table. I couldn't help taking his powerful, black-haired hand— or shuddering when I touched him.

"The creationists are right in the light of their own ethics—I'm a greater danger to the survival of their kind than they have ever guessed. But my own free-minded parents gave me different genes that dictate a different ethic. The mutant genes they made for me command my own survival, to father the future race. In my own new ethical world, the creationists are evil. Their genes threaten mine."

He drew me suddenly toward him around the corner of the table, scattering more glassware.

"You ask if I'm a god." Something in his ringing voice sent another shiver through me. "In a sense, Cyn, I am. The first real creator—though my pioneering parents have cleared the way. I want you to share my new divinity. To forsake *Homo sap*— the old race of muddling misfits tossed together by the slapdash accidents of natural mutation. I want you to mother the first really created race."

Trembling, crushed in his muscular arms, I could hardly hear his muted boom:

"A race of gods!"

From a letter signed Cynthia S., found in the papers of Dr. Elene Zehr, the biochemist who became Adam Smithwick's third wife and Darwin Smithwick's mother.]

1.

Belthar faced the gathered gods.

"Fellow immortals—we aren't immortal!"

His nimbus burning crimson against the bitter cold, he spoke from the great black throne in his Himalayan temple, addressing the listening images stacked many prisms deep in the circle of transceiver columns that supported the black granite dome. Beyond the soaring columns, a midnight moon blazed across the high wilderness of naked rock and untracked snow.

"The demons have escaped—the killer things the Creators hid in the genes of the premen. We stand in desperate danger so long as they survive."

"My Gleesh!" Cynthara's image shrilled from her niche, incredulous. "I gave you my beautiful Gleesh. It can hunt them down."

"If you thought your pet was a demon—" Belthar's aura paled with bitter scorn. "They killed your killer—as they killed my son."

"Killed my darling?" Her nimbus flared greener. "How?"

"I don't know how."

"Brother, is your own eternity failing?" Mockery flickered in Kranthar's golden halo and edged his rolling thunder. "Have you let two preman children beat you? A half-grown

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boy and a slip of a girl?"

"Watch yourself, brother, or they'll beat you." Belthar glared his indignation. "Their petty-seeming preman shapes are cunning disguises for creatures designed to kill us all."

"Weren't they exiled to die on Andoranda V?"

"That plan failed."

"Were you too clever, brother?"

"My good son's plan." Belthar's aura trembled, but he controlled his tone. "No escape was considered possible, from that lonely universe. The planet itself should have killed the preman race, with no damage to their precious treaty rights."

"So what went wrong?"

"The two young demons found traitors among us."

"Gods?"

"Two of our fellow eternals." His blue accusing eyes scanned the silent columns. "They somehow corrupted the pilot of their transport ship—the child goddess Zhondra Zhey. I knew she had always coddled them, but I never expected her to betray her own immortality."

Fury flickered in his nimbus and quivered in his voice.

"They found another ally we didn't know existed. A strange genetic blunder of old Huxley Smithwick's, that should have been destroyed. A monstrous little demigod with a demon's cunning, hiding here on Earth right under our nose. Its last den was on the old preman reservation. When Quelf flooded that, it got aboard Zhondra's ship and joined the rebel demons."

"So we face outlaw gods?" Kranthar's mockery had vanished. "Where are they now?"

"Our gravest problem." Belthar scowled at the starcharts above him. "The premen killed my son at Redrock and disappeared from there. My able clone commander guessed that they had fled to join their people on Andoranda. I sent him there on my best battlecraft, with orders to kill every preman he found.

"He found none at all."

"Good enough!" Kranthar rumbled. "The planet was to kill them."

"They didn't die there." Belthar glared at his self-content. "Ironlaw found evidence to tell a more shocking story. The demons did arrive. He found their footprints in the snow and traced them to the exile camp. But they were gone, and all the premen. He found nearly all their last cargo of supplies stacked around the landing pad. Thrown out, he thinks, to lighten Zhondra's transport. He believes she took the whole colony away—but he found no clue to tell him where they went."

"So what can we do?" Kranthar's halo was streaked with anxious orange now. "If the demons have disappeared?"

"We can arm ourselves!" Belthar's voice rang against the towering pillars and came back in dying echoes from the ice-crags below. "We can search the universes!"

"All the universes?" Kranthar blinked. "For one small ship?"

"For your own best chance to stay

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alive." Belthar glowered through a crimson blaze. "Because the demons won't be gone forever. With our best efforts and the best of luck, we can hope to find and kill them wherever those traitor gods have helped them hide. With worse luck—if our efforts fail—they'll be back to erase us all, as the last Creator planned in her insane senility."

He set the black throne to turning, his hard blue stare slowly sweeping the enormous circle of transceiver columns. The full moon shone through the columns, reaching with white gigantic fingers across the frost-dusted floor. Overhead, the black vault was alive with its flashing maps of the divine dominions.

"You know our peril." Outside the nimbus, red sparks of ice froze from Belthar's breath. "What is your will?"

Unease rippled through the pillared images.

"I share your apprehensions, Bel." The first clear voice was Cynthara's. "I recall our desperate war to put an end to the lunatic mischief of old Eva Smithwick a thousand years ago. I perceive a deadlier danger now, and I think we must all unite to face it. I place myself and all my planet under your command."

"Brother—" Kranthar's tone was chastened. "So do I."

Colors of assent shone across the columns.

"Your will is mine." Belthar pealed his answer, the red nimbus bright. "I accept your leadership. The demands upon you may be unexpected and severe. My first commands are these: You will join the search for the hidden demons with every means you can invent. You will arm your fastest starcraft with the deadliest weapons you can find. You will stand prepared. When the demons are found, I'll lead you anywhere, into any universe, to win the battle for our lives that we began a thousand years ago."

The pillars burned with strong applause.

They called the planet Eden.

"Our safe place," Buglet whispered. "At last, our home."

In the starlit afterdome, they swam in free fall, clutching the hold-ropes now and again as Zhondra braked the transport into a parking orbit. The planet was mostly water. The one great continent, wreathed with archipelagoes, was round as some ancient battle-shield, bossed at the center with a high crown of ice.

"A world without tectonic motion." A transceiver prism brought Pipkin's doll-voice from the nosecone, where he was learning astronautics. "The whole continent was evidently built from one volcano that never drifted off a single subcrustal hot spot."

Glaciers had burst in three directions from that high central basin, feeding three major rivers that had cut their black canyons through a wide ring of tawny desert to wander across immense cloud-veiled lowlands and spread their deltas into the planetary sea. Those green lowlands were scat-

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tered with huge blue lakes, all oddly circular.

A double moon spun above the planet, one element airless and crater-scarred, an iron-stained red, the other brighter than Luna, dazzling with snow. Close together, locked in orbits that held them face to face, they whirled like a strange dumbbell tossed into the starry dark.

"A wonderful world!" Buglet turned to him from the swelling planet, golden eyes alight. "Beyond the reach of all the gods."

"We should be safe." Davey caught her cool hands. "So long as they overlook the error of their starmaps. But—" A haunting dread shook his voice. "I wish we could be sure."

"We are sure." She pulled him closer. Her floating body collided gently with him and he caught the sweetness of her sleek black hair. "Starships don't get back from antimatter universes—not often. Pipkin got us here by unlikely accident. No god is going to risk his immortality to take another look."

Suddenly she was in his arms, her eager lips on his mouth.

"We'll have time enough," she breathed. "To have our child."

Dread touched him again, and she must have felt his tiny shudder.

"That's what we were born for." Her whisper was stronger. "To make the ultiman—the Multiman our people used to dream about when they needed faith in some new savior to rescue them from the reservation. The ultiman will have all your transvolutionary genes and all of mine, with powers we can't imagine. When we do meet the gods again, he can laugh at them."

"I hope—"

"I know."

"I love you, Bug." He tried not to tremble. "But I'm so afraid—afraid you'll be hurt."

"If you really are afraid, we must make the baby right away."

The goddess called them to the nosecone to help select a landing spot. Pipkin was there, anchored to a hold-bar with a yellow-furred arm longer than his body, his one green eye squinting at her young loveliness as avidly as if he had been a sexual being.

The area they chose was high on the west coast, where the gods agreed that the weather should be mild and not unduly wet or dry. Davey went down on the first shuttle flight, along with Pipkin and half a dozen preman volunteers.

Assuming command, the dwarf god had the muman pilot land them on a narrow cape that jutted into the sea beside a wide circular bay. When the muman had tested the air and found it good, Davey managed to be first upon the virgin world.

His heart was pounding, and he sniffed the fresh scents of Eden as eagerly as if they had been some precious perfume. The planet was smaller than Earth, its year and its day somewhat shorter and its mass a quarter less. The slighter gravity gave him a delightful sense of lightness.

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They had come down in the shallow valley of a stream that ran into the bay. The almost-grass was soft and ankle-deep, greener than anything he had ever seen on the desert reservation, starred here and there with huge yellow blooms. Across the meadows, the forest on the low hills was a darker green, mysterious but silently inviting.

"A good world." He smiled back at Pipkin, dancing lightly after him down the gangway on his two huge hands. "Better than I ever hoped for."

"You don't know it yet." Tiny body swinging in the air, the godlet paused to squint suspiciously into the empty landscape. "You may get a bad surprise." his wasp-voice whined. "There are signs I don't like."

Davey didn't wait to ask what those signs might be. Breathless to see more of Eden, he liked all he found. The sweet-scented plants, the sea-freshened air, the clean blue sky, the tranquilizing quiet. Nothing hostile met them anywhere.

"No large life forms." Their absence seemed to worry Pipkin. "I'd like to know why."

Without learning why, he went back on the shuttle in the middle of the short afternoon. Davey stayed. A big-bellied man called El Sapo had taken control of the landing party, setting up a tent and preparing for the night.

Davey had never liked El Sapo. Back at Redrock, he had been always sucking around the preman agent, scheming for appointments as sheriff or tax collector or judge and using his petty authority to harass El Yaqui for the peyote he chewed and the untaxed mescal he sold and the women La China kept upstairs. More than once, raiding the place, he had jailed Davey and Buglet until El Yaqui got them out.

He wouldn't look at Davey now. Assigning one man to drive tent stakes, one to dig a drainage trench, others to cut firewood and bring water from the stream and cover their equipment, he said nothing at all to him.

"Please," Davey asked, "what can I do?"

"I can give commands to men." El Sapo stopped to scowl at him with bulging, mud-brown eyes. "I have none for such as you."

"I'm a man." Davey flushed. "Old enough—"

"It's not your age." El Sapo shrank back. "It's what you do that men can't. No man—or Belthar himself—could have jumped from Redrock to the prison world without a ship. I don't know what you are."

"Buglet—Jondarc says we'll be the ultimen." His voice lifted quickly. "She says we were born with latent transvolutionary gifts that we can use to help the premen—"

"Help the premen?" El Sapo's hoarse croak mocked him. "You got us torn out of our Terran homes and shipped off to die in exile—those Quelf's torture gangs left alive—because the gods are afraid of latent transvolutionary gifts. That's how much you've helped us."

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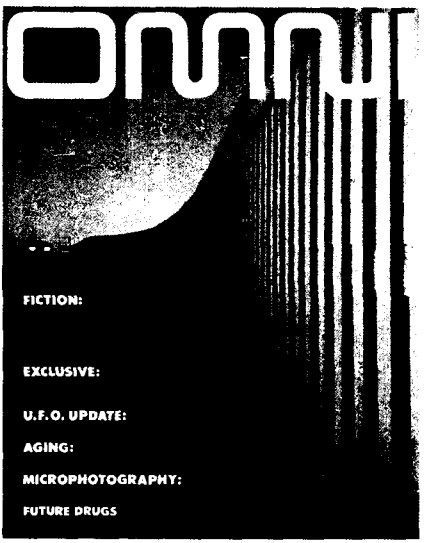

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Davey stood silent for a moment, stricken with his recollection of San Seven and his parents, truman friends who had died for aiding him and Bug. This accusation held a cruel truth that he couldn't deny.

"We mean no harm," he muttered at last. "We can't help the gifts we have—or even understand them." He tried to smile. "Here, we'll have time to master—"

"I don't know about you." El Sapo cut him off. "I don't want to know."

2.

He had a bad night, his joy in Eden dimmed. The cook gave him a ladle of yellow synthetic mush from the supper kettle and El Sapo tossed him a blanket, but nobody talked to him. He slept in a corner of the tent, dreaming that the twin moons were the mismated eyes of another demon sent to hunt them down.

The dawn restored a little of his spirit as he walked away from the tent to pee. Dew had silvered the grassy stuff and the cool air smelled fragrantly clean. Though he saw nothing moving, some creature in the nearest clump of trees kept repeating a musical, dovelike call. Eden was new, mysterious and beautiful, theirs to claim. Its unspoiled promise was headier to him than El Yaqui's mescal had ever been.

The shuttle came back before sunrise, settling slowly on its jet of roaring steam. It brought half a dozen more men and another half-load of equipment. When the muman said he needed a harder landing pad, placed where his suction hose could reach fresh water for reaction mass, Davey volunteered to build it.

Stiffly, El Sapo told him to go ahead. The laser drill was like the one he had learned to run at the truman commune and he took it to attack a rocky knob near a bend in the stream. Working all day alone, he split slabs of weathered granite and dragged them on the null-G line to dam the stream.

His hard pad was leveled and ready when the shuttle returned, with clear water pooled above the dam. The muman came out to inspect it, grinning approval, but he got no thanks from anybody else.

Next day he found another job. El Sapo had left him out of the gang of axemen sent upriver to begin cutting timber for their first building, but he was allowed to ride the floating logs down the stream and roll them back into the channel when they ran aground.

He was waiting for Buglet when the shuttle touched down with the last full load of people and supplies. She ran eagerly to meet him, but checked herself abruptly when she saw his face.

"Davey! What's wrong?"

"El Sapo blames me—both of us—for everything bad that ever happened to the premen. I guess he's afraid they'll be hit again, if the gods ever find us." He shrugged unhappily. "The worst of it is, he's half-right."

"Never mind." She kissed him gently, then very warmly. "A few of

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the premen have been strange with me. But when our child comes—when the ultiman is born—they'll know and like what we are."

They slept that night in the end of a new storage tent. El Sapo was careful to see that they got a fair share of the limited food and gear, but his mistrust had been contagious. Nobody felt easy with them.

Pipkin returned next day, alone with the muman in the empty shuttle. When they gathered around the pad, he came hand-hopping halfway down the gangway to ask for volunteers. The goddess had sent him back, he said, to search the planet for ores and other resources. He wanted two helpers.

With a glance at each other, they asked to go. Pipkin took off with them at once. Though the cruise took a dozen of Eden's brief days, his methods of exploration seemed oddly casual. On the maps they were making, he would pick a spot for inspection and tell the pilot to set them down. He would dance down the extended gangway and back again, often without touching the soil. His cynical solitary eye would sweep and abandon another virgin landscape—which Davey's imagination had always painted with undiscovered promise. A shrug of disdain would toss his tiny body.

"Nothing here," he would shrill. "We'll go on."

Sometimes, when Davey and Buglet insisted, he would allow them time to dig a plant or pick up a rock or take a photograph, but he was always contemptuous of their specimens.

"A poor Eden," he droned, when the muman was dropping them back toward that round western bay. "No free metal or rich ores anywhere. No oil or coal or radioactives. Everything stripped clean."

"Stripped?" Davey echoed. "How?"

The enigmatic green eye blinked. "I wasn't here."

"Maybe we were just too hasty," Buglet said. "Maybe we should keep on looking."

"We looked long enough." Pipkin opened his chilling blind eye. "I saw enough to know this wasn't always Eden."

Uneasily, they waited.

"I did see metal, deep underground."

The white eye closed, and Davey breathed again.

"But no native veins," that trapped-fly whine went on. "Only scattered masses, rusted and corroded, in the ruins of cities buried many million years ago."

Davey blinked and shook his head.

"Surprised." Pipkin's sardonic chuckle rattled like gravel. "Didn't you see the shape of all those lakes? And the bay where we landed? Craters! Made I think by missiles shot from the red moon—it has equally recent craters too, made I'm sure by missiles shot from here."

"If there was a war—"

"Both sides won." Wry malice furrowed the pink babyface. "Neither survived."

When they were on the pad, he

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capered down the gangway to squeak that same report to the premen who had gathered to welcome them.

"No ores?" El Sapo yelped his dismay. "No metal at all?" His murky stare shifted accusingly to Davey and Buglet. "Without metal, we'll go savage."

"Not so savage, I hope, as the creatures who did have metal here." The godlet grinned. "There is metal left, however, if you want to dig for it. Right under your feet. Used once, but still good enough for making weapons."

Standing on one huge hand, he swung the other toward the bay.

"That must have been a city before the missile hit it. The old suburbs stretch for miles east and north of here, buried under ejecta from the crater. You can use sonic probes to locate the scrap, some of it only a few hundred feet down."

Leering at Buglet, El Sapo muttered something Davey didn't hear. Pipkin beckoned him into the shuttle. He soon came back, croaking as he passed that El Muñeco wanted to see them.

"The Toad's unhappy with you." The green eye had a bright ironic glint. "Afraid to offend you, but more afraid to have you near him. I think you two must arrange to live apart."

Delighted, Buglet chose a spot they had seen from the air. A few miles west of the landing, it was on a narrow isthmus between the bay and the sea. As happy as she was, El Sapo detailed men to move them there, with a tiny tent, a few simple tools, and their fair share of the rationed food.

Pipkin rode the shuttle back to rejoin the goddess on the transport. She and the mutant were still teaching him transvolutionary navigation, and he was planning to explore the double moon.

They pitched the tent, and Davey began cutting logs to build a cabin. That went slowly, because he had no power tools—no power machines for lumbering or farming had been shipped to the exile planet, because no Terran life could grow there, and many tons of precious cargo had been abandoned when they left it, to make space for people.

Buglet helped him lever the cut logs into place on the stone foundation, helped mix mud to plaster them and peel rafters for the roof. Toiling together under the mild sun of Eden, they spaded up a tiny plot of soil where they could test the few Terran seed the preman had shared with them.

Once he stopped his spade to grin at her. They had been digging around a stubborn stump that proved too heavy for them to move. Dark hair bound with a strip of red rag, wearing only grimy shorts and halter, she was streaked with sweat and dust. An ache of mixed pity and joy throbbed in his throat.

"Strange work for the ultiwoman!"

"Don't fret." She stood up to get her breath, mopping at her muddy loveliness. "We've never been so happy."

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"El Sapo isn't. We're still a thorn in his paw. If we can outfight muman deadeyes and kill Belthar's son and jump between universes, he can't see why we must sweat to stay alive like ordinary premen."

"If they'll just let us live—" She reached to stroke his gritty arm. He saw the blisters on her fingers, and her lean smile touched his heart. "Till the child is born."

They didn't go back to the landing, but now and then a few preman friends came calling. She was laughing once, after two women had brought gifts: a newly fired clay cook pot and a bundle of native roots they said were edible if boiled long enough to kill the bitterness.

"They poked into everything we have and wanted to know everything we do." Her lemon eyes danced. "They hinted that we ought to marry."

"If you want—"

"If we were premen." She shrugged. "But we aren't—not since they put us out." Her gaze grew thoughtful. "I would like to see Zhondra Zhey."

By coincidence or not, the goddess came next day. They heard the shuttle roaring down to land at dawn and saw it climbing skyward again on its tapered plume. Davey was carrying water from their spring in a bark bucket that afternoon when she dropped before him out of the air, wrapped in the pale opal glow of her nimbus. Awe of her power chilled him for an instant, but her smile of greeting was as easily friendly as if they both had been common premen.

"Pipkin came down with me," she told him. "He's gone again now, with El Sapo and some of his people. They don't like this location, because there's no metal—"

"And because we're here?"

Her pearly halo winked.

"Anyhow, they've gone to search the continent again for ruins richer in metal, buried not so deep. If they can find a more promising spot, El Sapo wants to move the colony."

Levitating, she floated beside him to Buglet, who was tending a fire beside the still roofless cabin, trying to cook those bitter roots.

"Must you eat such things?" She made an entrancing face. "With all your ancestral gifts, can't you draw on transvolutionary energies the way we do?"

"We aren't gods." Buglet tossed her dark hair back, smiling lightly. "Not yet. We've never been able to unlock our latent powers without the stimulus of danger, and we're out of danger here." Davey thought she looked as luminous as the goddess did, beneath her streaks of soot and dust. "We're content enough to live like premen until the child is born."

"I'm afraid you feel safer than you are." Zhondra's glowing veil was flecked with a troubled blue. "In truth, there's more danger than you need. The gods are powerful, and you've alarmed them. I know Belthar. He'll be arming and searching desperately. If he should ever guess that our

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new universe isn't actually antimatter—"

"The child will make us safe," Buglet insisted serenely. "He'll be a match for Belthar."

The goddess stayed with them three days. She levitated the ridgepole, which had been too heavy for them to hoist. She lifted that great stump and the boulders out of their garden plot, piling the stones to hold a little pool below their spring.

She kept urging them to discover and exercise their transvolutionary gifts, but Buglet always insisted that the ultiman would come in time. Once Davey overheard low-voiced talk about the business of bearing a child. The goddess seemed concerned, and Buglet was certain she wouldn't need a preman midwife. For a moment he felt a little hurt at being left out, because he and Buglet had always shared every thought.

On the fourth day, the goddess was expecting Pipkin back. Busy that morning cutting tall grass to thatch the cabin, he listened and watched the sky, waiting for the shuttle. It didn't return. By late afternoon Zhondra was anxious, her aura pale and unsteady. She left them at last, levitating toward the zenith. The sun had set before she dropped back.

"They've gone." Her aura was faint in the dusk, dimly blue. "I climbed above the air, high enough to survey the whole continent. I couldn't find the shuttle. I searched the orbit for my ship. It too is gone."

Davey stood silent, stunned that a goddess should suffer such a loss.

"So Pipkin took it?" Buglet frowned. "I trusted him."

"Don't blame him too much," Zhondra protested. "He has lived his whole life in hiding, in terror of the gods. He must have been afraid Belthar would find him here and punish him for aiding you."

"El Sapo—" Davey blinked into the twilight. "They must have planned it together." His breath caught. "That's why he took so many of his cronies and their women." He peered at the shining goddess. "Where do you think they went?"

"No telling. The other planets of this sun are either hot and airless or cold gas giants, all unfit for settlement. There's no other star in normal cruising range. To find any better world, I think they would have to climb back through some contact plane—"

"And leave this universe? With the risk that Belthar might detect them?"

"That's possible." She gave Buglet a quizzical smile. "Maybe it will be the danger you need."

She went back to the landing that night, along with the worried group of leaderless premen who had come begging her for help.

"It's time, Davey," Buglet whispered when they were gone. "We must make the baby now."

They ran down hand in hand to bathe in the quiet sea. The double moon cast their shadows on the sand, long and black, oddly edged with red.

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Buglet was talkative at first, wondering whether the little ultiman would have their preman form, or whether he would wear a halo like a god, or perhaps be something altogether new. When he said nothing, she too fell silent. He was trembling, filled with a solemn awe.

In the cool surf, they washed off the day's grit and sweat. Watching her rise before him out of a dark wave, he shivered again. The moonlight drew a strange outline around her, one edge rose, the other silver. Her white skin shone and her thrusting nipples parted the bright black strands of her clinging hair. Her quick kiss had a cool salt taste, and her loveliness made an ache in his loins.

Needing no speech, they climbed silently back up the rocky trail to the new cabin. Their bed was a frame of peeled poles across the end of the tiny, mud-walled room, filled with branch-tips and dried grass. The glow of their dying cook fire came faintly through the open doorway, redder than the rusty moon, and he caught its smoky scent.

When the moment came, when he met the magic of her warm and firmly yielding flesh and had the clean taste of her discovering tongue, he felt suddenly weak and afraid. Who was he, to make the ultiman? With his toil-blistered hands still stinging from the sea salt, how could he dare challenge the hostile gods?

"Davey!" Her breath was warm and sweet in his face. "The baby won't wait!"

She moved deliciously beneath him, and they began to make the ultiman.

3.

When two short months had gone with no news from Pipkin or the missing starship, they built a home for Zhondra Zhey on Eden. She picked the site for it—a rocky point above the sea but near the landing—and she gave her own transvolutionary aid.

Davey used the laser drill to level the floor and to square massive stones that she levitated to lay up the walls. Pious premen cut logs that she lifted, riding them through the sky to plant them for entry columns or place them for roof beams.

The finished chapel was modest enough, but for Davey it held more sublimity than all of Belthar's enormous Terran monuments. To the abandoned premen, Zhondra was becoming mentor, healer, and judge, a genuine divinity. To him and Buglet, she was now a cheerful friend, unassuming and undemanding.

They had needed her aid through that first hard season. Starvation had been near. Though some of the native fruits and roots could be prepared and eaten, they bloated the belly without sustaining life. A few of the shy little wild creatures had been trapped, but they were no more fit for food—because, she said, Eden's ecology was built from an alien set of amino acids.

Precious seed had been lost at first, until they learned how to feed the young plants with recycled waste, but

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the soil was rich enough with minerals and watered nearly every afternoon with a brief and gentle rain. By the time the chapel was roofed, bits of Eden had become abundant gardens, yielding beans and squash and yams and corn. A few stray grains of rice and wheat had sprouted, promising seed for future fields. There was still no meat—no large domestic animals had been shipped to Andoranda Five, because they couldn't reproduce there—but the colonists were breeding rabbits and chickens from pets the children had managed to bring.

Gold eyes bright, Buglet told Davey that the little ultiman was on the way. Her elation gave him a pang of unexpected fear that the coming child, so wonderful and powerful, might take away the love that had been his. Though he strove against that disloyal dread, it came back again and again to haunt him.

Yet, most of the time, he felt happier than he had ever been, because Buglet was so radiant. Certainly her love had not yet diminished. The days were good, spent together at work or swimming in the tranquil sea; the nights revealed new orders of joy.

Out of habit, he listened now and then for the shuttle or scanned the sky for its plume of steam, but it did not return. At the urging of the goddess, he tried sometimes to recover those genetic gifts that had once been strong enough to lift them away from Earth, but Buglet was too utterly absorbed with the child to give him any aid and the placid charms of Eden always hid the reality of danger too completely. His uncertain efforts failed.

With Eden's axis only slightly tilted, the brief seasons flowed by with little change. Mild spring changed to milder summer, only slightly warmer. They finished the dam and opened a ditch to bring water to the garden if the rains should fail. They planted a row of chili and an apple seedling. They added another room to the cabin, to be a nursery for the ultiman. Preman friends brought gifts for it, and slabs of a white bark that could be pounded into cloth.

Summer turned to fall, not quite so warm or wet, too soon for Davey. Living with that secret terror of springtime and the ultiman, savoring each fleeting day of Buglet's love, he felt almost glad that Pipkin had not come back with the ship.

"Dave— Davey!"

Wanting nothing to break the simple cycle of their lives, he had to hide a jolt of fear that day when she came back from a visit to the goddess, breathless with a new excitement. He had been clearing a new garden plot. He dropped the spade and waited uneasily.

"Zhondra says we aren't alone." Flushed with feeling, she gestured toward the beach. "She has got in touch with civilized creatures—living under the ocean!"

He breathed again, relieved. "Under the ocean, they shouldn't matter to us."

"But they're amphibian. They can breathe air. Zhondra hasn't seen them

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yet, though she has been learning their language through transvolutionary contact. They're coming ashore tonight—a group of three. She wants us to wait with her to meet them."

"Must we?"

"Of course we must." She stared at him, startled. "Why not?"

"I'm happy as we are." He reached to take her hand. "I don't want anything to change."

With an understanding smile, she leaned to kiss him. "I love the way we are," she whispered. "But things do change. You know that, Davey. We can't stop change."

The meeting was planned for moonrise—even the soft sun of Eden, the goddess said, was too severe for the amphibians. They went down with her at dusk to the beach beneath her chapel.

Waiting, they swam in the softly breaking surf. The goddess, in her opalescent halo, looked as humanly seductive as Buglet. His awe of her was not entirely gone, but she seemed as easy with them as another preman, racing with them, diving till he couldn't help feeling frightened for her and darting up beside him, nude and dripping, alluring in her pale iridescence. Once he felt his penis rise and dived to hide his sudden confused desire. She and Buglet stood together, smiling, when he dared look at them again.

Graver when the moonglow came, she led them back to the hard white sand. Drying, shivering a little in the cool land breeze, they sat watching the water. The moons rose together, the white one in eclipse. The dull glow of the crimson moon seemed baleful to Davey, but soon the other had climbed from behind it, silvering everything.

With a shining dart of her aura, Zhondra pointed.

"There—" Wonder had broken Buglet's voice. "There they come!"

Three bright flakes of foam, swimming in through the silvered surf. Three tapered shapes that left the black water, came sailing through the moonlight, settled lightly below them on the sand.

The goddess called a strange sound of greeting and levitated a little way to meet them. Buglet moved as if to follow, but Davey caught her arm. He shivered again, as if the night wind had grown colder, and stood peering at the creatures, groping for some sense of what they were and what they meant. Streamlined for the sea, they were shaped a little like the seals and dolphins he had seen on truman wallscreens, but they were luminous, wrapped in blue auras almost as bright as Zhondra's.

"They can levitate," he whispered to Buglet. "They're—"

He wanted to call them godlike, but dread had hushed his voice. Floating in the moonlight, dipping graceful flukes for anchors on the sand, they seemed as light as balloons. Sleek within their separate blue cloudlets, they had very fine scales or very fine fur—he couldn't be sure. It was white over the belly, shading smoothly into jet across the back. Their arms were

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slender flippers, edged with streaks of brighter fire. One had picked up a shell with its fingered nimbus.

Their eyes were even stranger. Wide bright discs, with bars of shifting color radiating from tiny black pupils. Their owlish stares alarmed him, because they seemed to see too much.

Floating closer, Zhondra spoke to them with words he had never heard. Their replies were silent—seemingly, their physical speech was the play of shade and hue in those glowing rings around their actual eyes. He understood nothing of it, and he began to wonder why she had wanted them to come.

That odd conference continued for a long time. Tired of standing, he and Buglet sat back on the damp sand. He saw her shiver and put a towel around her. The moons climbed higher, the red-rimmed shadows drawing shorter. Once, when the land breeze lulled, he caught the odor of the creatures, rank and snakelike.

"Jondarc!" the goddess called suddenly. "They want to meet you."

She stood up, tossing off the towel. He caught her hand to hold her back, but she slipped away from him with a look that seemed a warning. Silently, seeming unafraid, she walked past the goddess toward the amphibians. They lifted and swam to gather around her. Their great eyes studied her. Drifting closer, they reached almost to touch her with their quick black flippers. With tendrils of pale blue fire, they fingered her face and her hair. They palped her swelling belly.

It seemed an endless time to Davey before they swam aside, dropping back to touch the sand and turning the wink and shimmer of their talking eyes again to the goddess. Left alone, Buglet stood crouched against the wind. Now, Davey thought, she looked bewildered and afraid.

"Thank you, Jondarc," the goddess murmured. "That was what they wanted."

For a moment, as if paralyzed with dread, she didn't move at all. Turning as if the movement took an effort, she looked back at the amphibians. They ignored her now. She caught a gasping breath and darted up the beach and into Davey's arms. He could feel the pounding of her heart.

Drawing farther back behind the goddess, they watched. At last they sat again, the towel around them both. The moons climbed, and still that singular parley went on. He was stiff and chilled before the amphibians blinked their enigmatic farewell and dived back into the sea.

Zhondra floated gravely to them, her halo pale.

"They frighten me." Buglet stared after them, across the dark ocean. "What do they want?"

"They're afraid," the goddess said. "Afraid of you."

They climbed after her back to the rustic chapel. She invited them inside. Sitting at an axe-hewn table behind the altar, they had crisp little bean cakes from offerings the premen had brought, and pottery cups of a spicy

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tea brewed from a benign native herb.

"I know we talked a long time." She smiled at Davey's restless impatience. "The amphibians were trying to summarize a good many million years of history. Though the details are mostly lost, it seems that high intelligence had evolved here—on dry land. The arts of genetic engineering were invented. The new creators made three races. One was to inherit the continent. Another was adapted for space. The third was these amphibians.

"Their history prefigures our Terran tragedy. Having supplanted their own creators, the new beings were afraid of new supplanters. The chief conflict rose between the continental beings and the space mutations, who had been established on the moons.

"The creators had been killed, as Eva Smithwick was, in the effort to stop creation. The amphibians claim that their histories don't tell whether it was the land folk or the space folk that killed them. I can't help suspecting that the sea folk did it themselves.

"Anyhow, as their story goes, the space people and the land people each believed that the other had stolen the secret crafts of creation. Each feared that the other would make deadlier things to destroy them. To prevent that, they fought. Their final war left the craters we have seen and wiped both races out.

"The amphibians survived, though pretty narrowly. Most of their city domes were wrecked, and the whole ocean was poisoned with residual radioactives that washed off the land. They were saved—at least a handful of them—by their transvolutionary powers."

On three sides, the altar place was open to the sky. Moonlight fell across

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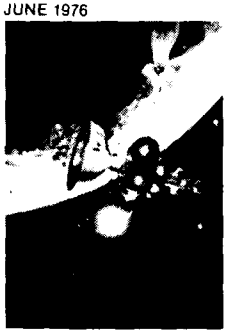

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them, silver bars rimmed with crimson. A cold night wind came through the axe-carved posts behind them, and Davey felt Buglet shivering against him.

"So now you'll understand." The goddess extended her aura to pour more steaming tea. "That's why the amphibians fear you."

"But I don't understand," Buglet whispered. "We won't hurt them."

"They've lived through one war between new creations. They want to avoid another."

"How?" Davey demanded. "What can they do?"

"We were debating that. I wanted them to help us hide and protect the young ultiman, but they're afraid to take sides." Uncertainty shadowed her nimbus. "I don't know what they'll do."

"How do they know so much about us?"

"They have transvolutionary senses." Her quick smile forgave his unuttered accusation. "They were observing us before we ever landed. I was careful to tell them no more than they had already suspected."

"Now what?" Defensively, his arm slid around Buglet. "What can we do?"

"We can keep on hoping the gods don't find us." In her faintly glowing veil, Zhondra shrugged. "The amphibians are afraid they will."

Returning to their cabin, Davey and Buglet had to walk along the beach. They hurried silently, hand in hand, watching the moonlit sea. A cloud had covered the snow moon, and the other dyed the murmuring surf a fatal scarlet. Davey's throat was dry with dread before they reached their own rocky path.

"If we needed danger," he muttered, "we have it now."

"Trust the ultiman," Buglet urged him cheerily. "He won't have to fear amphibians—or anything."

That winter they sowed a narrow strip of wheat in front of the cabin, and rice in a tiny plot they could flood from the dam. They bartered red beans for a hen and a setting of eggs. On a soft spring morning, Davey persuaded Buglet to come with him to the clinic the colonists had built. The preman surgeon shook his head very gravely when the examination was done and pronounced the child too large for her. Only a section, he said, could save it. Unfortunately, with his limited equipment and inadequate supplies, in such a difficult case he promised nothing for the mother.

Untroubled, she refused his surgery.

"I'll be okay," she whispered to Davey as they were leaving. "The ultiman won't hurt me."

She was napping, the next afternoon, and he was building a wattle coop for the hen, when the mild sky began to ring with the jets of the shuttle. Unbelieving, he saw it settling on its cushion of dazzling steam toward the landing. He woke her to tell her.

"Go get the news." She sat up heavily. "I'll wait—I don't want to walk so far."

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Jogging up the beach, he was passing the chapel when he saw a small yellow projectile dropping toward it from the direction of the landing. It was Pipkin, levitating. The tiny god alighted, waved a long arm at him, and hopped into the altar place.

He found El Sapo and his followers still near the pad, locked in a hostile confrontation with El Jefe, the new leader of the premen. The men were long-bearded and the women bedraggled, all of them pinched from starvation, but El Sapo was trying to assert his old authority.

Before he became El Jefe, the new leader had been Jesus Cabrito, named by his mother for some forgotten preman demigod. A stringy little weak-eyed man, he had been the Redrock jailor for many years. His present elevation came from a few marijuana seeds he had brought from Earth. Now, squeaky-voiced with alarm, he was demanding information about where El Sapo had been.

"Nowhere." El Sapo's heavy paunch was gone. "We were looking for a better place—better for all." His murky eyes squinted shrewdly at El Jefe. "A place where we could mine good metal and eat the plants and hunt for meat that wouldn't give you colic."

He clucked and shook his grizzled head.

"We never found it. We did get lost—or Pipkin did. Stupid little miscreation. Wits gone the way of his legs. We had to ration everything. Pure luck the muman astronaut got us back before we all died of famine."

He demanded food and shelter. El Jefe sent for tortillas and a pot of beans, but he wanted confessions and apologies from the deserters and a promise of respect for his own position. El Sapo kept insisting that he had been risking himself and his friends for the benefit of all, with no intention of deserting.

Snatching ravenously with filthy fingers, he and his people scooped up the tortillas and beans, but at sunset their future status was not yet settled. With no real information gained, Davey hurried back down the beach. At first he meant to stop at the chapel to see what he could learn from Zhondra and Pipkin, but a vague unease spurred him home. The moonless dusk was thick when he climbed back to the cabin.

"Bug?"

She didn't answer his apprehensive hail. The cook fire was dying, the cabin dark and empty. She was gone.

4.

He stirred the coals to get fire for a torch and searched the cabin again. Table and stools had been overturned. Fragments of a broken pot grated under his feet. The floor was sticky with spilled chili stew, the air edged with a faint burnt scent of the yams Buglet had been baking in the ashes. Nothing told him anything about her attacker.

Frantic now, he ran circles around the cabin, bending to scan the ground. He found no strange footprints, no

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sign of further violence, no clues at all. When the torch flickered out, he picked his way by starlight down to the sea and ran up the beach toward the chapel, reckless of the rocks and driftwood that tripped him again and again.

The dark moon was rising before he arrived, its blood-colored glow in the altar hall as ghastly as his terror. Zhondra sat slumped down on her rough stone altar, so lifeless that he wondered if her dim gray nimbus had become too weak to lift her. Pipkin was hopping erratically here and there, as if the floor burned his hands.

He panted his news that Buglet was gone.

Zhondra's eyes were dilated and black, staring blankly out into the red gloom beyond the posts. She made no sign of hearing.

"Don't vex her now," Pipkin whined. "She's got troubles enough."

"Can't you hear?" he shouted. "Bug's gone!"

"I know." She turned briefly to him then, with a glance of sad sympathy. "She vanished from my perceptions just after sunset. I sensed an instant of shock and fear, but I couldn't catch the cause. That was all. I have been searching, but I can't feel her mind."

"What could have got her?" He waved the furry godlet out of his way. "What can we do?"

Deaf to him again, she gazed back into the reddened dark.

"Blame me, Davey." Pipkin shambled toward him, narrow face abject, green stare fixed on his feet. "Forgive me, if you can. I gave us all away—but not because I meant to. I was afraid of Belthar—I've always been afraid. I took the ship and that pack of rascals to look for a safer planet."

"Which you didn't find." Anger grated in Davey's voice. "I guess you brought trouble back."

"The tragic truth." His bald head bobbed. "But not out of malice—believe me, Davey! We were victims of monstrous mischance. I knew Belthar would be scouring all the universes, and I never planned to compromise our safety here—and don't you forget that I'm the one who found this asylum for us! You'll forgive me, Davey, when you know the dark story of our misfortunes. An evil fate pursued us, more fearful than the gods."

A tear of self-pity shone in his eye.

"When the other planets of this sun proved unfit for life, we set out for the only nearby star—it's a red dwarf you can't see from these latitudes. The muman tried to warn us that it was too far, but I didn't want to risk breaking through a contact locus into any space where Belthar's armadas might be cruising.

"Our voyage took too long. The reaction mass was dangerously depleted, and food for the premen ran short. When at last we got in telescopic range, the star proved to be a close binary, with no planets at all.

"With no oceans for water, we had to orbit the double sun to search for cometary snowballs from which reactor mass could be refined. That took

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too long. The premen were near starvation. With no other star within possible range, we were really desperate—don't you understand?"

"I understand enough."

"Believe me, Davey!" the pink doll-face twitched as if with actual pain. "We had no choice. I had to search out a contact plane. We slipped through it—hoping not to be observed. Unluckily for everybody—by unexpected and appalling misadventure—the gods had a monitor there. We were observed."

"So you did betray us?"

"Don't—don't be so harsh." The piercing insect creak hurt Davey's ears. "We were all betrayed, don't you see? Cut down by the monstrous enormity of fate." Pipkin bent his arms to sit weakly on the floor. "Don't—don't you see?"

"I see your treason," Davey rasped. "You gave away the secret that had been saving us. The gods observed you. I guess they followed you back." He swung to Zhondra. "Is that why—whatever happened to Bug?"

"Possible." She nodded forlornly. "The coincidence does suggest a connection, but I can't discover what it is."

"But the gods have found us." He scowled at Pipkin. "And they're coming now?"

"I've just had a glimpse of Belthar in his Terran temple." Her faint aura grew even fainter. "I don't know how, because that's far beyond the normal reach of my perceptions. But I saw him."

Her pale hands spread and fell in a gesture of despair.

"He was giving orders to scores of the gods, there in his transceiver columns. Most of them were already on their battlecraft in space. He's sending them through all the contact planes around Eden, to close in all around us. He wants the planet sterilized."

"I thought—" He braced himself as if to take a blow.

"I hoped it wouldn't be so soon."

"The nearest ships did follow Pipkin," she said. "They're all faster than our transport."

"Are they already—" Dread dried his throat. "Could they have taken Buglet?"

"I don't know." The snow moon was rising now. In its cold light, she looked small and vulnerable and infinitely sad. "If they aren't here now, they will be soon."

"What—" He stood swaying, clenching his fists, feeling utterly trapped, unable to think or act or even to breathe. "What—"

"You've been saying you need danger." She aroused herself to give him a wry and tiny smile. "Our situation has surely become dangerous enough. If you're ever going to find your ancestral gifts, you'd better find them now."

"But Bug's gone." Hopelessly, he shook his head. "Our transvolutionary actions always took both of us. More always came from her than me. I can't—can't do anything alone."

"If you can't defend us—" She looked suddenly through the posts

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into the milk-white sky, as if she had sensed something new there—something that appalled her. Her voice was fainter than her aura, "—nobody can."

He stood numb, unnerved and powerless.

"Davey?" Pipkin's tiny whine seemed far away. "Won't you understand that we never meant to harm you or your wonderful Buglet." Standing on one hand, the godlet reached to tweak his sleeve. "Can't you forgive me?"

He looked down at Pipkin with a stiff little grin.

"I'll forgive you, Pip," he whispered. "If that matters now."

"Thank you, Davey!" Pipkin seized his hand. "It matters greatly to me that now we're friends again."

The grasp of the horny paw seemed pathetically firm, but the lone green eye stabbed at him with such a calculating shrewdness that he knew the godlet was moved more by fear than friendship—fear, even of him.

"Okay," he muttered. "Now what can we do?"

"Nothing *we* can do." Pipkin sagged back to the floor, great arms sprawling, lifeless as a broken doll. "It's all up to you."

"Zhondra—"

Sunk down on her rude little altar, still as a statue in the white moonlight, she didn't seem to hear. Her dilated eyes were gazing far away again, perhaps at the jealous gods.

"I'm going back." He turned uncertainly away. "To look for Bug."

Outside the chapel, he glanced toward the preman town. Except for one torch flaring above the door of the council hall, it seemed peacefully asleep, unwarned of any peril. He saw no help there. El Sapo and Jesus Cabrito were probably still squabbling for domination, but neither would love the unborn ultiman.

He tramped back down the moon-washed beach. Though rocks and driftwood were now easy enough to see, he still sometimes stumbled blindly. Grappling desperately to reach his latent powers, he found only sick frustration. His few successful leaps out of space and back had always required a clear image of the arrival point. The battles he had won, with muman and clone, demon and Belthar's son, had always been close face-to-face encounters. With all his groping, he could reach no actual contact with any enemy, find no picture of any place where he could go for Buglet.

He was turning up the path off the beach when sudden thunder crashed across the moon-white sky. Cliffs and trees stood sharply black against a blue false dawn behind him. A hot blue star climbed out of it, trailing a swelling wake of illuminated steam.

The shuttle, taking off. Was Pipkin trying to escape again before the gods could strike at Eden? Had the goddess fled? Or both of them? He watched until the sky was silent and the fire had faded from the vapor trail. Feeling utterly abandoned, he turned bitterly again to search the path for footprints, for blood, for bits of Buglet's clothing.

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For anything, for any clue—

A purple flash made him duck. Something heavy grazed his shoulder. The impact knocked him off the trail, sent him reeling to his knees, his nostrils filled with a rank muskiness.

What had struck him was a long, sharklike shape. Sliding on above him, it spun against the sky and came flying back, vast eye-discs blazing. Pale blue fire bathed it, flowing in thin bright fingerlike jets from its reaching flippers.

The truth hit him, a second dazing blow. The amphibians, with their transvolutionary senses, had already perceived the approaching armada of the gods. Trying to forestall the kind of conflict that had once wrecked their world, they had taken Buglet—where, he couldn't guess.

Now they had come back for—

The thing was diving at him again, snatching for him with those long claws of sapphire light. He dropped flat, rolled aside. He felt the reaching nimbus seize him. His body dragged on the gravel, began to lift. He caught a shrub with both hands, clung desperately.

The great tapered body went on by, swept ahead by its own momentum. The drag upon him weakened and broke. He fell heavily back to the path. The creature whirled above him, eclipsing the double moon, and dived again.

Half stunned from the fall, his breath knocked out, he scrabbled for any sort of weapon. For a stick he could punch into those purple eyes. A rock he could throw—

Something caught his feet.

Before he could clutch at anything, he was dragged into the air. Hanging head down, he was carried toward the sea. The moon-bright beach raced back beneath him. He saw the red-fringed shadow of the thing that had captured him. Two others followed.

The amphibians came in threes. They shared the multiversal energies of the gods, and they meant to defend their underwater world. Considered objectively, they were perhaps as blameless as El Sapo and Pipkin claimed to be. But, with his senses spinning and his blood pounding in his ears, Davey didn't feel objective.

He bent his body, clutching at the lean black flipper. His fingers slipped at first, but then they clung. He clawed his way upward around that huge, blue-glowing barrel. Suddenly he was astride it.

The amphibian began to buck beneath him, like a mule he had tried to ride long ago back at Redrock in El Yaqui's corral. The brown mule had thrown him, while little Buglet shrieked with terror for him and the old trader laughed, but now he kept his seat, digging his heels into yielding, rank-scented, gill-tissue, hanging on with both hands.

With his own halo!

For his hands were shining now, filmed with cool white fire. It flowed from his fingers into long bright talons hooked into the creature's fighting flesh.

A savage exultation seized him. The

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amphibians were targets he could reach, and they had brought the shocking danger he had to have. Testing the new power of his aura, he probed into its pitching body, searching for something vital.

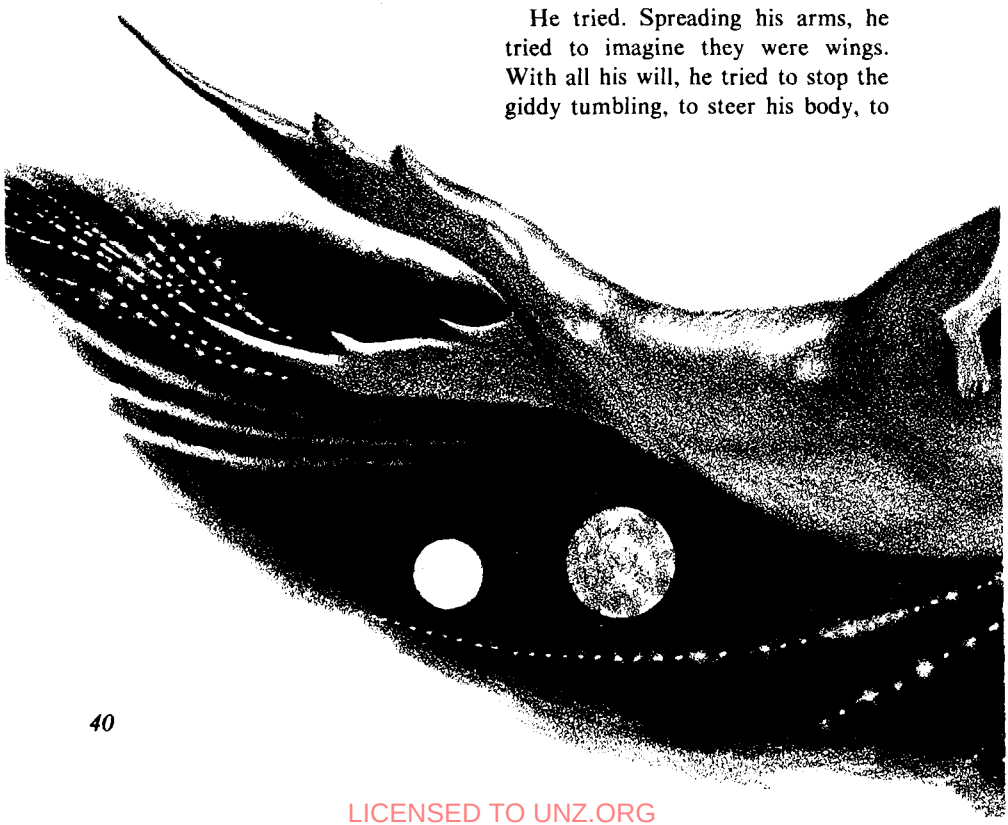
It screamed. The creatures had been mute, the whole encounter silent, and that eerie whistle startled him. The thing dived into the shallow surf, splashing him with brine. It climbed again, turning until he hung beneath it. As if blind with fear and pain, it wheeled back toward the shore.

Deep inside it, he found a firm pulsing organ that he thought must be a heart. He gripped it hard, squeezing for its life. Shuddering above him, the creature dived for the beach.

He tore again at that dark heart. The sleek-scaled flesh jerked and stiffened. The blue aura flared and flickered out. He knew the thing was dead, but still the wind of its dive whistled in his ears. Falling on its back, it would catch him beneath it.

Still high above the white line of sand and surf, he let it go. Kicking away, he tumbled in the rushing air. Beneath him, the dark sea crept back. The sand expanded, bits of weed and shell creeping away from the jagged granite outcrop he would strike. It would surely kill him—unless he could levitate.

He tried. Spreading his arms, he tried to imagine they were wings. With all his will, he tried to stop the giddy tumbling, to steer his body, to



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brake his downward plunge. His will was not enough. The long dark shape of the dead amphibian kept pace with him. Yet he knew he must keep on trying.

For he must not die.

He had to live, to rescue Buglet, to save their child. With that purpose firming, he felt a sudden sense of physical control. Widening, brightening, the white nimbus became an intimate part of his mind, more sensitive than sight, stronger than his limbs. Spreading it, he caught himself.

Easily now, joyous with this newfound power, he guided himself aside. He let the dead thing pass him, hurtling ahead to dash into the rocks. He hovered to see it fall, dived again, dropped gently on his feet closer to the surf.

For a moment the milky sky seemed empty. Then he found the two survivors diving at him from over the sea, one just above the other, eye-spots blazing purple-red, screaming in unison as if they had shared the other's dying agony.

Facing them, he smiled and braced himself. Balanced on tiptoe, letting

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the aura bear most of his weight, he reached to meet them with a long arm of light.

They squealed. Their eye-spots shrank and dimmed. Veering just enough to avoid him, they darted past so close that he felt a gust of their musty rankness. As they climbed over the dark coast, he swung to face them, ready when they dived again.

Instead, they wheeled twice high above him. Silent again, they dipped toward that rocky ridge to settle beside their dead companion. Blue auras laced about it, they lifted it and carried it back above him and out across the surf. Floating free, as if his triumph itself had cancelled gravity, he watched them splash down with it, watched the islet of foam that shrank and vanished where they had dived.

He felt as drunk with victory as he had been a time or two with El Yaqui's raw mescal. The dark moon now eclipsed, the high snow moon flooded the beach and the sea with its limpid splendor. Except for the soft hiss of the surf, that silver world was still. Its dwellers had fled. He was the master now. Spreading his hands to see their glowing power, for a moment he felt godlike.

But then his eyes were drawn to a pale white shape tossed up on the crest of a toppling wave. His elation was erased. Numb with an unbelieving dread, he splashed toward the object. Another wave flung it into his arms.

Buglet's body.

Floating naked, face down, it was cold and already rigid. Her long black hair was wound around her, tangled with weed. He held her when the wave washed back, and stumbled blindly with her toward the shore.

5.

The white moonbloom mocked him now. With Buglet dead and the ultiman unborn, only he was left on Eden to invite the vengeance of the gods.

He reached the shallows, the cold foam hissing around his ankles, the icy body awkward in his arms. His brain and breath had stopped. The pain in the core of his being throbbed too deep for sobs or tears. Bug was dead.

With no reason to go on, he stood there, he never knew how long. His back was stiff and his arms were aching when his numbed mind began to move, and he found no hint of any hope. The amphibians, striking out of their dark abyss, had killed everything. All the generations of his special breed had lived in vain, with the last Creator's secret plan now come to final failure.

The dark moon had slid out of its eclipse before he moved, lining his shadow with blood. A silent wind had risen, redolent with the night flowers of the inland forest, and its chill bit through him. All his transvolutionary powers had died, and the body was now a leaden weight. Stumbling with it, he waded toward the beach.

Though little was left for him to do, Buglet must be buried. He wanted no help from the premen. Their old rituals had never meant anything to her, and most of them would feel more

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relief than sorrow when they learned that she was dead. He would dig the grave near the cabin where they had loved.

He felt a quick little thrust where her body pressed against his flank. Trembling, he laid her on the wet sand and knelt beside her. The tight skin across her belly was warmer than the stiffened limbs. His ear against it, he could hear a tiny, steady drumbeat. Another firm sudden thrust pushed it against his cheek.

The child—the little ultiman was somehow still alive!

Doubting himself, he caught his breath and stared blankly out across the moon-glittering sea till the world quit spinning. He bent again to listen. The baby heart still beat, regular and strong. The baby feet kicked again. An icy awe brushed his spine.

Shivering, he groped for some notion of what to do. Carry her to the preman clinic? He shook his head. For all their other quarrels, El Sapo and Jesus Cabrito would stand united in their hostility toward any miraculous ultiman, and the preman surgeon would be too terrified to touch her.

He decided to take her to the chapel. Zhondra had been their only actual friend. A goddess, she shouldn't be afraid. Perhaps—unless she had fled with Pipkin aboard the climbing shuttle—perhaps she could save the child.

The moons were low before he got there. A gaudy dawn blazed beyond the dark hills and reddened the still disc of the crater bay. The cool air carried a woodsmoke scent, drifting from the waking town.

Two old women came out through the entry posts, as he staggered up the chapel path. They stopped a moment, staring at the bare white body in his arms. Their worn fingers flickered through an odd ritual gesture he had seen El Yaqui use. Without a word, they turned and ran. He climbed the rough stone steps.

"Zhondra! Zhondra Zhey?"

Only echoes answered from the dark stone chamber behind the open altar place. He could smell the chili-and-chicken the women had left on the altar bench, but the goddess was gone. Reeling with fatigue, he shuffled to the altar and laid the body there.

In another universe, Zhondra Zhey stepped out upon the snow-dusted floor of Belthar's enormous Asian temple. There, by chance, it was also dawn. The plains of cloud beneath the sacred peak were still blue-black with night. Sun-gold had begun to brush the higher slopes, but she had to brighten her aura against the searing cold.

"Welcome, child!"

The deity of Earth turned from the pictured gods in the transceiver columns all around him and levitated down from his massive throne to meet her.

"We had a false report—that you had stayed to aid the preman demons." Jovially, he smiled through his red halo. "We rejoice to see the truth. At the moment we're engaged in an

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emergency convocation. When that is concluded, it will be our delight to greet you properly." His bold eyes probed through her own pale aura. "If you'll wait in the guest hall—"

She thickened her nimbus to shield herself.

"It's true I've been with the exiled premen—"

"You admit that sacrilege?" Belthar's smile congealed. "Consorting with demons—"

"I've joined the people of the Fourth Creation—"

"Then hear their fate!" Red anger blazed across his aura. "We've found their hideout and we're moving to obliterate it, along with all your unholy allies. Our battle fleets, gathered from a hundred suns, are already closing in. Your evil Eden is already within perception range. Neither preman nor demon will be left to trouble us again—"

"Listen, Belthar!" Her clear voice lifted to ring against the lofty dome. "I come with a message." Her grave eyes rose to the listening pillars. "For you and all the gods."

"Child, are you insane?"

"I come to speak for the Fourth Creation, which was made to halt your misrule—" Blue aura bright, she waited for the stir and rustle of astonishment to die. "You have all been scheming for a thousand years to forestall the arrival of the promised ultiman. In spite of you, he has arrived."

"The baby demon?"

"I'm here to warn you, Belthar." She spoke again to the tall transceivers. "The ultiman has sent me to warn each of you. No harm must come from you to any creature on the planet Eden."

"What can an unborn baby do?"

"Must I show you, Belthar?"

"If you can!" Down on the black floor now, he strode toward her, his great laugh booming against the dark vault. "I'm not afraid of babies."

"You ought to be." Steadfast before him, she looked up again to the gathered gods. "Because the ultiman is heir to a new order of power, as far superior to yours as yours was to that of the premen who made you. If you ever had a chance to harm the ultiman, you lost it long ago."

"Daughter, we offered you our bed." He glared through scarlet fire. "Your fantastic threats have not alarmed us, but your apparent madness compels us to withdraw that special sign of favor."

"Better listen to her, lover." Cynthara's green-veiled image called from her transceiver prism, the tone grave enough but the bright smile ironic. "They killed my darling Gleesh, remember? My pretty pet. Now they've somehow jumped this upstart infant across the universes from Eden to your temple without a ship and in an instant—a feat you couldn't match. Perhaps we ought to reconsider—"

"Reconsider demons?" Belthar bellowed. "We fight them for our lives."

"The ultiman respects your moderation." The child-goddess smiled at Cynthara. "You'll find him far less ruthless than you have been."

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Her somber eyes swung back to Belthar.

"He doesn't wish to kill, but he will not be killed—or allow his people to die. For their sake, he has sent me to instruct you that all your battlecraft in the Eden universe must be withdrawn at once."

"You dare instruct me?" His great bronze arm swept upward, the nimbus condensing beyond it into a mighty sword of incandescent energy. "Here's my reply to your ungodly ultiman!"

The blazing blade slashed at her.

"The ultiman regrets—"

The falling sword had touched the cool opal shimmer of her nimbus. Blinding light exploded. Thunder cracked, drummed against the starry dome, rolled away into the snowy dazzle of the peaks beneath the temple.

Belthar stood paralyzed with astonishment.

Gravely calm, the little goddess reached through that exploding fury to touch his arrested hand.

Sudden silence. An abrupt dusk fell from the black granite vault as that blade of fire went out. Belthar's nimbus had been extinguished. He stood naked on the frost-sifted stone, his ruddy color swiftly fading, the angry light dying from his eyes. He shuddered. His skin turned gray. His giant body sagged.

"What—" His mighty voice had become a rusty creak. "What—"

The sound became a dying sigh. The lax mouth twitched and gaped. The vacant eyes blinked in mute bewilderment. The bloodless hands jerked and hung slack. The body crumpled, pitched backward to the polished stone, lay staring blindly up at the charted stars the gods had ruled.

"The ultiman doesn't wish to kill." Small in that startled hush, yet strong enough, Zhondra's voice lifted again to the soaring columns, where consternation had dimmed the imaged auras. "He will not allow his people to be harmed, but you will not find him vengeful."

Here and there, a silent nimbus brightened.

"He still requires your armada to withdraw." She swam back from the empty body on the floor. "He still regrets what he had to do, but you will find him secure against any attack you can mount. The Creators made him superior. Your divinity—and mine—is sustained by solitary transvolutionary cells scattered through the nervous tissue. He draws power and perceptions across the multiversal interfaces through a fully developed transvolutionary brain center."

She recoiled again from the dead god as if his fate appalled her.

"All—all he did was to freeze those transvolutionary cells." Her shaken voice grew firm again. "When Belthar was cut off from the multiversal springs of his divinity, his human half could not sustain itself." Her tone lowered, as if she were adding her own comment to the ultiman's declaration. "I guess his body had grown too old."

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Looking up, she stood waiting.

"Tell him—" Cynthara's halo shone green and paled again. "Tell the ultiman that all my battlecraft have been ordered to return at once from the universe of Eden."

"Mine—mine also." Gaining confidence, Kranthar's mellow voice echoed against the transceiver pillars. "The truth is, I always considered my dear brother a little too vindictive in his wars against the Fourth Creation. I'm delighted, now, to express my respect for the new ultiman. In this, I believe, we'll all agree."

He paused, with an expectant shimmer of his nimbus. After a silent instant, the first hesitant whisper of assent began its swell toward a ringing chorus. The pillars blazed with bright approval.

"Tell him we hope to be his friends." Cynthara was suddenly herself again, greenly aglow with her sleekly opulent charms. "We want to know him better."

"I'm sure you will," Zhondra said. "But remember he'll know you. If there is ever danger, from any of your acts or plots, his sharper perceptions will detect it. Whatever comes, he will defend himself and his people."

"Trust us!" Kranthar pealed. "We want no conflicts with such an awesome being. When the ultiman gives commands, they'll be obeyed."

"He'll have commands." She glanced up as if to read the starcharts overhead. "I'm to stay on Earth to be his voice. You have agreed to recall all your forces with no harm to Eden. You must also give safe passage to the ship I used to pilot, which is now in flight back to Earth. My friend Pipkin will be loading supplies here for the preman colonists. Later, he will offer return passage to Earth for any who request it."

Once more she waited, and agreement murmured through the pillars.

"I'll ask advice from Kranthar and Cynthara, his brother and his sister, about rites and memorials." Her eyes fell again to the gray and shrunken thing that had been a god. "Perhaps this temple should be preserved as his mausoleum."

Green and golden, their auras flashed quick assent.

"The ultiman is pleased to accept your promises of loyalty." Her hand lifted in a gesture of dismissal. "When he has another message, your attention will be called for."

The images winked out.

The rising sun had cleared the wild surrounding peaks, and its first golden shaft brushed the little goddess, brighter than her halo. Left alone with the dead god on that vast snow-dusted floor, she stood gazing up at the circle of columns soaring around her, black and enormous, empty now. Released by the ultiman's relaxing will, she shivered with astonished awe.

Eden's gentler sun had also risen. Rushing out of the rude little chapel there, Davey felt mocked by the dewy peacefulness. The eastward sky was pink, the air cool and sweet. He heard roosters crowing in the preman settle-

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ment and caught a pleasant breakfast scent of chili and tortillas.

Two men met him below the chapel steps. Both had been his schoolmates back at Redrock, though never very friendly – a little jealous, he had always thought, because he and Buglet had caught Zhondra's favor and been allowed to live in the agent's house.

"Sorry, Davey." Armed with long peeled poles, they were watchfully alert but also apologetic. "We've got to stop you here."

"I want a doctor."

"El Jefe sent us to keep you out."

"I've got to get a doctor."

"He's had us keeping track of you." Chiquito gulped and wet his lips, shifting his grip on the stick. "Last night we saw too many funny things."

He turned uneasily to Pepe, who was Jesus Cabrito's son.

"Too much for me." Pepe had his father's weak and bloodshot eyes, and he squinted at Davey as if the soft sky had become too bright for him. "We saw three things – things like dragons flying around your hut. Later we saw you riding something in the sky– it looked like one of them. We saw you hauling Jondarc's body out of the sea."

"That's why I need a doctor."

"I don't think you do," Chiquito muttered. "Not if she's dead."

Again he looked at Pepe.

"My father doesn't know what you are." Pepe's uneven breath had a marijuana sweetness, and his nasal voice was quick and shrill with apprehension. "I know you claim to be the ultimen, but that's a lie if Jondarc's dead."

"We don't say you're lying," Chiquito added nervously. "But the ultimen wouldn't need a preman doctor."

"Whatever you are—" Pepe peered into the shadowy chapel and spat on the gravel near Davey's feet. "My father told us to keep you out of town."

"No offense, Davey." Chiquito tried to smile. "Nothing personal."

"Okay," he muttered. "If that's the way it is."

Walking away from them, he caught his breath and drew his shoulders straight. The living ultiman was certainly no lie. Perhaps, after all, he didn't need a surgeon.

Back inside, he dropped on his knees beside the altar. Buglet's body lay face up, her yellow eyes glazed and blind. Bits of weed were drying in her matted hair. Her rigid limbs were white and icy, rough with clinging sand. Terror shook him when he touched her.

Yet her bulging belly still felt warm. His ear against it, he heard the baby heart still drumming. He felt a baby kick.

And his terror ebbed.

That awesome evidence of life itself was proof of the latent powers he and Buglet had begun to discover. If he could leap outside the spacetime of Earth to escape from the Redrock jail, if he could jump across the multiverse from Earth to Andoranda V, surely he

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could move a baby half a foot. Chilled with the solemn desperation of that purpose, he shut his eyes against the unendurable truth of Buglet's death.

He reached—

The child was in his arms, slippery and squirming, pillowed on red and dripping tissue. Crimson and wrinkled at first, it quivered as if with agony, fighting for air. It gasped and breathed. Its thin little quaver became a crowing shout. It was suddenly swathed in rose-hued light.

He couldn't help recoiling from the hot reek of blood and the shock of its alien strangeness. He nearly dropped it. But then its eyes came open, as yellow as Bug's. Its twitching lips seemed to grin. It winked at him.

A wave of tender warmth swept over him, thawing that first cold revulsion. Part of Bug, the tiny writhing creature was also part of him—something about that grin brought back his first look into a mirror, in La China's perfume-scented parlor back at Redrock, when he couldn't have been two years old. His throat throbbed. He drew the haloed baby toward his heart.

But it was kicking in his arm, its vigor astonishing. Its red bald head rolled toward Buglet's body. Its tiny arms flailed out as if reaching for her face. He bent to let it touch her. Shining brighter, the little fingers brushed her gaping, bloodless mouth.

Its rosy nimbus flowed all around her. Faint at first, that glory grew slowly stronger. The baby hand drew back. The baby head rocked uncertainly aside, golden eyes blinking at her. The tiny mouth drew into a toothless smile.

He heard its joyous little squeal—and forgot the ultiman. For the glow of life had flushed the gray skin beneath that rosy veil. The rigid limbs jerked and quivered. The blind eyes blinked. The fallen jaw trembled and the gaping mouth went shut.

Buglet sat up.

"Davey!" Terror froze her face and glazed her eyes again. "The amphibians, they—"

She had found the altar stones beneath her, seen the axe-carved posts, heard the burbling chuckle of the baby in his arms.

"I thought—" Bewilderment stilled her voice. "Maybe I was dreaming."

Shivering, she stared at a long strand of weed tangled in her hair.

"You were dead, Bug." His own voice came strange and faint. "The amphibians left you drowned. But they couldn't kill the ultiman. He has been delivered, and he brought you back to life."

She sat gazing at him, crouching as if the pink nimbus hadn't fully thawed the chill of death. She looked longer at the child, which was leaping against his arms, screaming now as if to test the increasing power of his lungs.

"Our son?" Her lemon eyes came back to Davey, black with shock and at first unbelieving, suddenly bright with tears. Trembling, her luminous arms reached for the child. "If he can undo all that death does, he really is the ultiman!" ■

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Andrei Sokolov

SALUT to SALYUT

The Space Race is still going on, despite the fact that most Americans don't know it—or don't care.

JAMES E. OBERG

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A new epoch in the history of humankind is quietly but rapidly approaching. Soon, perhaps within twelve

to twenty-four months, the period in history will begin when there will always be people in space. There will never afterwards be a moment in time when human beings are not outside the protections and restrictions of their birthworld.

This space population will be small at first, and transient, but their numbers will grow and their stay times will lengthen. Perhaps there will be four people, a few months at a time, then ten people for half a year at a stretch, then twenty or thirty or fifty people, some staying in space for years.

They will speak Russian.

Life in space needs water, air, and food. Already, Soviet spacemen are able to recycle their water supply in a 95% closed loop system. Chlorella algae banks are now being ground tested and flight tested to lead to the generation of oxygen on board spacecraft. Space gardens, under the evocative project name OASIS, have produced food in space, first as a novelty, then as a dietary supplement; someday such gardens will provide the mainstay of human space food supply.

At some point ten or fifteen years from now, the semantics and the word connotations will blur, and the term "space station" will no longer be quite appropriate. The occupants of space may no longer consider themselves temporary visitors. These Soviet orbital outposts will deserve a new title. They will be called "space colonies."

This is the opinion of Western observers who have been highly impressed with the technology and the mission planning of the Salyut-6 space mission in 1977-1978. It grabbed headlines around the world, shoving its way onto the front pages of a space-blasé America. But far more important information about the Salyut was not widely circulated, although there was no lack of Soviet candor or justified boasting. Pages and pages of new technical specifications have been released in Moscow, but somehow have not reached the Western public.

And Salyut is only the tip of an iceberg, observers suspect. Behind the scenes, there has been a stampede of Soviet man-related spacecraft into orbit during the past year or two. Rumors continue to grow more specific concerning a Soviet winged reusable 'space shuttle.'

Seven different types of new space hardware have been detected. A whole new generation of space tracking ships are being launched. A new mission control complex has been inaugurated near Moscow.

Somehow, about five years ago, So-

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viet space program managers seem to have gotten hold of a book of blank checks. They paid for the careful engineering homework, avoiding the old 'space spectaclar' grabs which once characterized (and crippled) the Soviet space program. Today the careful work and tremendous expenditures are becoming visible, and the future course is not hard to chart.

Moscow spokesmen are explicit about their goals, and their flight tests underline these goals. They will build permanently occupied space stations in near-Earth orbit, with observatories, factories, and laboratories. And they will do it soon.

To see where they are going, let's take a look at where they came from. Many of their problems of the past are clear in hindsight, and many of these problems have now been eliminated.

The recent successes of Salyut-6 have served to dim the memories of earlier problems in the Salyut program. It made its first flight in April, 1971, and was at that time billed as a "salute" to the tenth anniversary of Yuri Gagarin's space flight. The name stuck, but the celebration was premature.

The first crew sent to board the Salyut-1 was unable to link up correctly and had to return to Earth quickly. The second crew, composed of cosmonauts Dobrovolskiy, Volkov, and Patsayev, did board the station early in June 1971 and lived there for more than three weeks. On their return to Earth (apparently a week earlier than planned), a freak hardware failure allowed the air to leak out of the ship through a pressure equalization valve. The cosmonauts suffocated as they lay in their couches, since no Soviet spacemen had used spacesuits since 1965.

The addition of new spacesuits and emergency oxygen supplies occupied the space of the third couch in the cramped Soyuz command module. From 1971 on, the Soyuz became strictly a two-man spaceship.

In midsummer 1972, Moscow rumors said a new Salyut would be launched. Later, Western sources claimed its booster had failed. Moscow kept silent.

As the Skylab launch date approached in early 1973, Soviet space engineers apparently were under intense Moscow pressure to get off a successful mission first, as a memorial to their Salyut-1 martyrs. The Kremlin was not just satisfied with a brief two-man stay. Plans were drawn up which called for two separately launched Salyuts, each to carry cosmonauts just prior to Skylab. This was to provide a suitable upstaging for the American space shot.

It didn't work. The first Salyut circled the Earth empty for several days before breaking into pieces. The second Salyut, launched barely three days before Skylab, seems to have failed almost immediately and was never even identified. Instead, the drifting space hulk was labeled 'Cosmos-557', a bland cover story designed to conceal the satellite's true (and unsuccessful) purpose.

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Under political pressure, the Soviet space program had reached, stretched, faltered, and failed once again. Lessons were noted. The Salyut debacle of 1973 was the last major politically inspired space spectacular.

That period in 1968-1973 marked a time of cosmic humiliation for the Soviet Union and its space program. Soviet responses ranged from desperate stunts like a 'three-ring-Soyuz-space-circus' in 1969 to the rushed Salyut schedules which led to disaster in 1973. Boosters exploded, spacecraft failed, cosmonauts died.

Footnote: Part of Moscow's discomfiture at this time was due to the forced cancellation, for purely propaganda reasons, of the expensive Soviet man-to-the-Moon program, only months away from success. After spending billions of rubles to beat Apollo, Moscow was faced with the prospect of a second place finish in a race it had bragged it would win. But rather than make such an overt admission of inferiority, a new tack was chosen: to claim that there really never had been a race, thus undermining the value of the Apollo victory. Since this 'big lie' coincided with what many Western space critics (both left wing and right wing) had been claiming for years, it was widely circulated and accepted. But the race, and the Soviet loss, had been real.

Apollo reached the Moon in late 1968, and landed in mid-1969. More landings followed. Skylab succeeded in mid-1973, and successive astronaut crews visited it, repeatedly setting new records. The space race became a rout.

It was, in other words, the Soviet Union's turn to suffer a "sputnik syndrome." Soviet space successes in 1957-1964 has 'goosed' the United States into space and opened the treasury coffers. Their response, too, was similar. Money was given without political strings, for a change. American overtures for cooperative space ventures were finally answered, and led to the Apollo-Soyuz linkup. As a result of that project, hundreds of top Soviet space technicians got an inside look at American space planning, management, and operational techniques.

The year 1973 was characterized by two, twenty-ton Salyut space derelicts which marked Russia's abortive attempt to upstage Skylab. Oddly, the two Salyuts were subtly different.

Western observers detected the first hints of a pattern in these two ruined Salyuts, although the full intricacies and implications of this pattern would not emerge for another two or three years. What was gradually becoming clear was that the Salyut program had a split personality.

There were actually two separate space station programs concealed under the single name "Salyut." For convenience, the two aspects became known as the "scientific" Salyut and the "military" Salyut (although "Earth observation" Salyut would probably have been more accurate and more justifiable for the latter version).

The first differences had been no-

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ticed by radio amateurs, particularly by the outstanding group at the Kettering Grammar School in Great Britain. The radio frequencies of Salyuts fell into two different and consistent classes, and the telemetry formats were also different. Further, the operational altitudes of the Salyuts also fell into two distinct bands. A typical scientific space station was put into a high orbit (say, 340 km) and was generally kept inertially stable; the military Salyuts were in lower orbits (typically about 280 km) and were usually horizon stable. The former altitude was appropriate for astronomy, and the latter, for Earth surface photography.

Later, the composition of the cosmonaut crews was also seen as a clue. While every cosmonaut crew commander was a military pilot, the copilots on the scientific Salyuts were always civilian technical specialists. The copilots on the military Salyuts were always military engineering officers. Additionally, the military Salyuts were equipped with an automatic data return capsule which is sent back to Earth after the last cosmonauts have departed (possibly it carries film from a reconnaissance camera, but no details have ever been released).

Extensive publicity surrounds typical scientific missions, while the military missions are called "working flights" and little information is released. Only a single blurry scene on board a military Salyut has ever been released, while dozens of photographs and drawings are published from the scientific Salyuts. The scientific stations are completely described in almost every detail; even the grossest physical configurations of the military Salyuts are unknown (observers assume that they are vaguely similar to the civilian scientific versions, but this may not be true).

Salyut-3, launched in June 1974, was of the military species, while Salyut-4 (launched six months later) was scientific. Soyuz-14 spent sixteen days docked to Salyut-3 in July, and cosmonauts Popovich and Artyukhin carried out Russia's first successful space station mission. But the glory was tarnished a bit when the Soyuz-15 crew failed their rendezvous attempt in August and were forced to make an emergency night landing (that was the entire purpose of the mission, a delayed Moscow bulletin lamely asserted). The mysterious return capsule from Salyut-3 was brought back to Earth in September, and the space station itself was deliberately plunged to a harmless destruction over the Pacific Ocean in January.

By then, Salyut-4 was up. One crew (the Soyuz-17 cosmonauts Gubarev and Grechko, who both met again in space three years later on Salyut-6) stayed up thirty days, and the next crew was to have stayed twice that. However, their booster failed during launching on April 5, 1975, and they crash-landed in the Altai Mountains, nearly being killed in a terrifying tumble down a mountainside. Their backup crew made the planned flight on

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Soyuz-18 (the failure was never numbered, and is no longer mentioned) six weeks later. Lastly for Salyut-4, in November an unmanned Soyuz automatically linked up for a 91-day stay, clearly in hindsight a precursor for Salyut-6/Progress-1.

Salyut-5, placed in orbit in June 1976, was a direct descendent of Salyut-3. Even the cosmonaut crews had been backup cosmonauts for Salyut-3.

As a military Salyut, Salyut-5 also carried out an impressive series of natural resources surveys and an interesting program in materials processing. However, the announced work levels were still far too light to have accounted for even a significant fraction of the spacemen's workdays. The cosmonauts were busy doing other things which Moscow never described.

The first Salyut-5 visit was by the crew of Soyuz-21, launched in July 1976 on what was called a "routine" tour of duty, a "working flight." But almost without warning, after seven weeks in orbit, the men landed. Generally, Moscow releases prelanding hints starting about a week before touchdown. This time, the bulletin revealing that the cosmonauts were coming back was issued only hours before their actual landing. Observers suspected some sort of an emergency.

Psychological ("sensory deprivation") or physiological (the copilot's medical data later showed signs of marked deterioration after six weeks) reasons were proposed. However, one rumor from Moscow stated that an unknown glitch in the life support system had resulted in an "acrid odor" building up beyond the point of toleration. The flight was cut short by only a week or two, observers theorized.

This "acrid odor" hypothesis was later supported by the actions of the second crew to board Salyut-5. For the first time, cosmonauts stayed overnight in their Soyuz after linking up, and remained in their spacesuits. The visit only lasted two weeks, during which the cosmonauts changed the entire air supply of the Salyut; following their return to Earth, the station was deactivated the next day.

That puzzling scenario took place in February 1977 with Soyuz-24. Actually, the first attempt to send a second crew to Salyut-5 had occurred in October 1976, but the Soyuz-23 cosmonauts had been unable to link up correctly. Instead, they returned suddenly to Earth, landing at midnight in a raging blizzard.

By the most bizarre accident, their command module plopped right into the only body of water in the desert recovery zone, a salt lake named Lake Tengiz. For several hours, rescue forces fought the elements and balky equipment to save the lives of the two freezing spacemen. At dawn, a helicopter was able to attach a line to the chilled capsule and tow it to shore.

By any measurement of experiments completed, the Salyut-5 mission was probably the biggest failure since Salyut-1. Hence, a similar mis-

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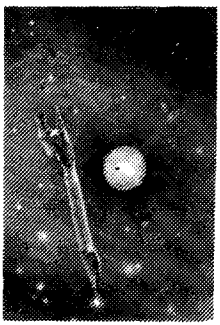

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sion may be flown again sometime late this year or early in 1979.

Meanwhile, the "two faces of Salyut" pattern was completed by the appearance of Salyut-6 in September 1977. It had all of the typical characteristics of the scientific Salyuts.

Ten days after the launch of Salyut, and only a month before the major celebrations of the sixtieth anniversary of the Bolshevik coup d'état ("revolution"), the opening of a planned manned space spectacular began. The Soyuz-25 blasted off with two rookie cosmonauts who expected to stay on board through the new year celebrations.

But once again, Soviet spacemen found themselves rushing home after another linkup failure (the fifth in six years). It seems that the Soyuz had rammed into the forward Salyut docking port with excessive speed, apparently damaging the Soyuz docking probe and possibly the Salyut docking funnel as well. Repeated attempts to make a docking were made, all unsuccessful.

While out of contact with the ground, and with the deadline for committing themselves to an emergency landing closing in, the crew decided not to try the aft docking port. Perhaps they felt that their damaged probe could ruin that port, too. Perhaps they had not been trained in the proper backup procedure. Perhaps they just panicked. They headed back to Earth, and did not find a hero's welcome.

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For the first time in Soviet space history, returning cosmonauts did not receive the hitherto customary 'Hero of the Soviet Union' medal. This snub seems to have been a mark of censure—somebody must have decided that the failure was the fault of the crewmen.

Soyuz-25 marked an inauspicious beginning to the Salyut-6 mission (and probably an inglorious end to the space careers of comrades Kovalyonok and Ryumin), but the failure allowed the Soviet Union to demonstrate some uncharacteristic boldness and maturity in mission planning. Formerly, the ability to roll with the punches of space emergencies, and to rescue at least the crews and usually the whole mission as well, had been considered exclusively an American trait. It highlighted American space superiority.

In the past, Soviet space failures had led to automatic aborts and long months of post mortems. But in a span of eight short weeks in late 1977, Soviet space planners rapidly scheduled a complex series of unplanned space maneuvers to make up for the Soyuz-25 failure. These maneuvers were then carried out flawlessly, much to the amazement and admiration of Western observers.

The maneuvers involved using a major new feature of the Salyut-6. It had two operational docking ports, one at either end of the cylindrical space station. Each docking port was connected to a transfer module about two meters in diameter and three meters long; the forward transfer module had a side hatch and doubled as a space walk airlock, while the aft transfer module was surrounded by fuel tanks and rocket engines, and doubled as a head and shower compartment. Between them, and separated by another set of airtight hatches, was the main body of the station, a cylinder about four meters across and nine meters long. Total habitable volume was 100 cubic meters.

The Soyuz-26 crew (Romanenko and Grechko) successfully linked up on December 11th, but they used the aft port because the forward port was suspect. Since the next test flight (the Progress) needed to transfer fuel to the aft port fuel tank attachments, Soyuz-26 had to be removed. Hence, a contingency spacewalk checked out the forward port, clearing the way for a new Soyuz to dock there in January. The new crew then returned to Earth in the other crew's Soyuz, clearing the aft port. A robot space tanker called the Progress-1 was launched four days later.

The Progress tanker and additional Soyuz visitors were then able to make use of the aft port, and everything was back as it should have been—except for a three month delay and the expenditure of two extra Soyuz spacecraft.

Both Soyuz and Progress are based on a similar design. Each weighs about 7000 kg, and has three modules. Their service modules, containing power supplies, rocket engines, and electronics equipment, are quite similar, although Progress has more auto-

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matic equipment. Their forward modules, called the "orbital module," are shaped the same, although on Soyuz it provides living space for crewmen while on Progress it carries dry cargo. The center module, which is the command module on the Soyuz, has been entirely rebuilt on the Progress, and contains fuel tanks instead of cosmonauts, parachutes, and a heat shield.

Total cargo weight on the Progress is 2300 kg, nearly one third the weight of the entire ship. On the Soyuz, a cargo of perhaps 300 kg can be carried in addition to the crewmen.

According to Soviet statements, the operation of a Salyut space station daily creates about 20 to 30 kg of waste material. These expended air canisters, dirty linen, empty food packages, and other trash from the Salyut are stowed in the emptied sections of the Progress cargo hold. Once the resupply operation is completed, the robot ship plunges back into the atmosphere and burns up.

Additional supplies are used up daily, such as propellants, dumped dirty water and air lost during airlock cycling. These can be made up from Progress, too. Each tanker carries the equivalent of half a full load of Salyut propellants, as well as bottled water and air. Bottled nitrogen is used to push the propellants (hydrazine and nitric acid) through the fuel lines.

Hydrazine and nitric acid are nasty chemicals to handle under normal terrestrial conditions. Pumping 1300 kg of them from one spacecraft to another was an impressive technological accomplishment.

The fuel was primarily for the Salyut maneuvering rocket, which allows the station's orbit to be trimmed for an upcoming rendezvous or boosted to compensate for slow orbital decay. The rocket can be fired by the cosmonauts or by ground command. After a year or two of service, an old Salyut station is carefully de-orbited over a precalculated region of the Pacific, without the risk of falling on populated regions.

Salyut space stations are designed to be resupplied indefinitely, unlike the Skylab, which was launched in 1973 with essentially all of the consumables to be needed on the entire mission. Astronauts later restocked certain items (food, medicine, film), but it was a makeshift effort. Salyut-6 has been designed and built with resupply and refueling and modular replacement of equipment all in mind—so all bets are off regarding how long it could stay in orbit. It might still be hosting cosmonauts into the 1980s.

Food is by far the easiest consumable to restock, along with medicines and scientific recording media such as film, magnetic tape, and logbooks. But water can be a problem, unless, as on Salyut, the conveniently sized storage bottles come with rapid disconnects and can be replaced as units (when needed, since most of the water is recycled).

Air, too, can be tricky, especially in the Soviet system. Cosmonauts do not

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use bottled oxygen/nitrogen which can be periodically bled into the cabin, but instead they run the cabin air through golfbag-sized canisters which contain sheets of potassium superoxide. The humidity in the air reacts with the chemical and gives off oxygen. A canister is fully used up in about ten man-days, and then becomes so much junk; a fresh canister can be connected into the unit in about three minutes.

Carbon dioxide is scrubbed out of the air with packs of lithium hydroxide, as on earlier U.S. manned missions (Skylab had a sophisticated molecular sieve). Salyut also has replaceable air filters, and odor controlling (hopefully!) activated charcoal.

The life support systems of the new Soviet spacesuit are equally impressive. When Georgi Grechko exited from the Salyut-6 transfer module on December 20 to check out the suspect forward docking port (no damage was found), he was making Russia's first space walk in almost nine years. A new generation of extravehicular equipment had been developed.

Grechko's spacewalk was obviously an improvised affair. Problems in scheduling communications required that the walk take place over Soviet territory, where most of their tracking stations are located. But this happened to coincide with the middle of the cosmonauts' normal sleep period, and on the dark side of the Earth. But the imminent launch of Soyuz-27 and Progress-1 required urgency, so the walk was made.

The new Soviet spacesuit entails a "hard suit" concept for the crewman's torso, with soft legs and arms. Built into the back of the cuirasslike torso unit is a hatch through which the crewman enters the suit. Mounted on the hatch is the entire life support system, including oxygen, a cooling unit which pumps water through a fine mesh of plastic tubes, and radios.

A crewman can don the suit unaided in five minutes, with a few pulls at strategically located lanyards and D-rings closing the suit and activating the systems. Prior to that, adjustments to special straps must be made to accommodate his physique, since the suit is adjustable to the extent that "one size fits all." Soviet engineers boast that the gloves are fine enough to allow the use of ballpoint pens, and that the arms are limber enough to be clasped behind the head.

The spacesuit is an extremely impressive piece of equipment. Published reports claim that its main purpose will be to conduct space assembly tests on later space walks. For the first time, handrails and work platforms have been installed on the exterior of a Salyut space station, so many more space walks can be expected this year.

Another innovation was the adaptation of Moscow Time by the Salyut crewmen. On earlier flights, cosmonauts' sleep periods were scheduled when the Salyut was out of range of in-country tracking sites. Now, to facilitate mission control activities on

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the long flight, the men woke at 8 AM Moscow time and went to bed at midnight, wherever they actually happened to be over the Earth.

This change was made possible by a tremendous improvement in space communications. While the men slept, the next day's schedule would be uplinked via a teletype printer (like Skylab's). Contact was maintained during working hours by the trans-Soviet string of bases running from the Crimea to the Kamchatka peninsula, and by a fleet of tracking ships in the Atlantic and Mediterranean. In 1977-1978, four new ships have been built and named for dead cosmonauts: the Volkov, Belyayev, Dobrovolskiy, and Patsayev. They join the Gagarin, Komarov, and Korolev, already in service. Also, a new mission control center near Moscow (first tested during the Apollo-Soyuz flight) has now replaced the old center at Yevpatoriya in the Crimea.

Many of the Salyut's navigation and control chores are now automated via the Delta system. This is an onboard minicomputer which constantly plots the parameters of the Salyut's orbit (using Doppler shifts from beacons inside Russia), its communications schedules on future orbits, and its sunrise/sunset times for experiments. The gimbelled solar panels (Skylab's were fixed, those that were left) can be turned to face the Sun, whatever the station's body attitude is, under the control of the Delta autopilot.

Further technological improvements have been implemented on Salyut-6. These include a new "unified fuel system" which allows both the high thrust maneuvering engines and the low thrust attitude engines to use the same propellant supply (this allows them both to be refueled together). The thermal control system has been entirely rebuilt, and new heat radiators have been installed. Instead of three momentum control wheels as on Skylab, the Salyut has a 100 kg spinning sphere, magnetically levitated, twisted, or accelerated so as to provide a gentle inertial force to the whole station (large scale maneuvers still require the use of the attitude thrusters). A shower has been installed, as on Skylab. An air processing unit called the Freshness device is used to ionize the cabin atmosphere to levels which seem to maintain the crewmen's alertness and vigor. A whole battery of medical equipment is in use to measure physiological adaptation to weightlessness.

To counter the deteriorative effects of weightlessness, the cosmonauts use a "lower body negative pressure unit," which is worn as bulky trousers (the crewmen can move about the cabin with it on, unlike on Skylab). An exercycle and treadmill were installed. Furthermore, the crewmen spend several hours per day wearing tight elastic suits which require muscular tension to stand erect or to move arms and legs. One suit made the ground test personnel walk so awkwardly that the cosmonauts jokingly referred to it as the "Penguin Suit"—and the name stuck. Crewmen still use it, alternat-

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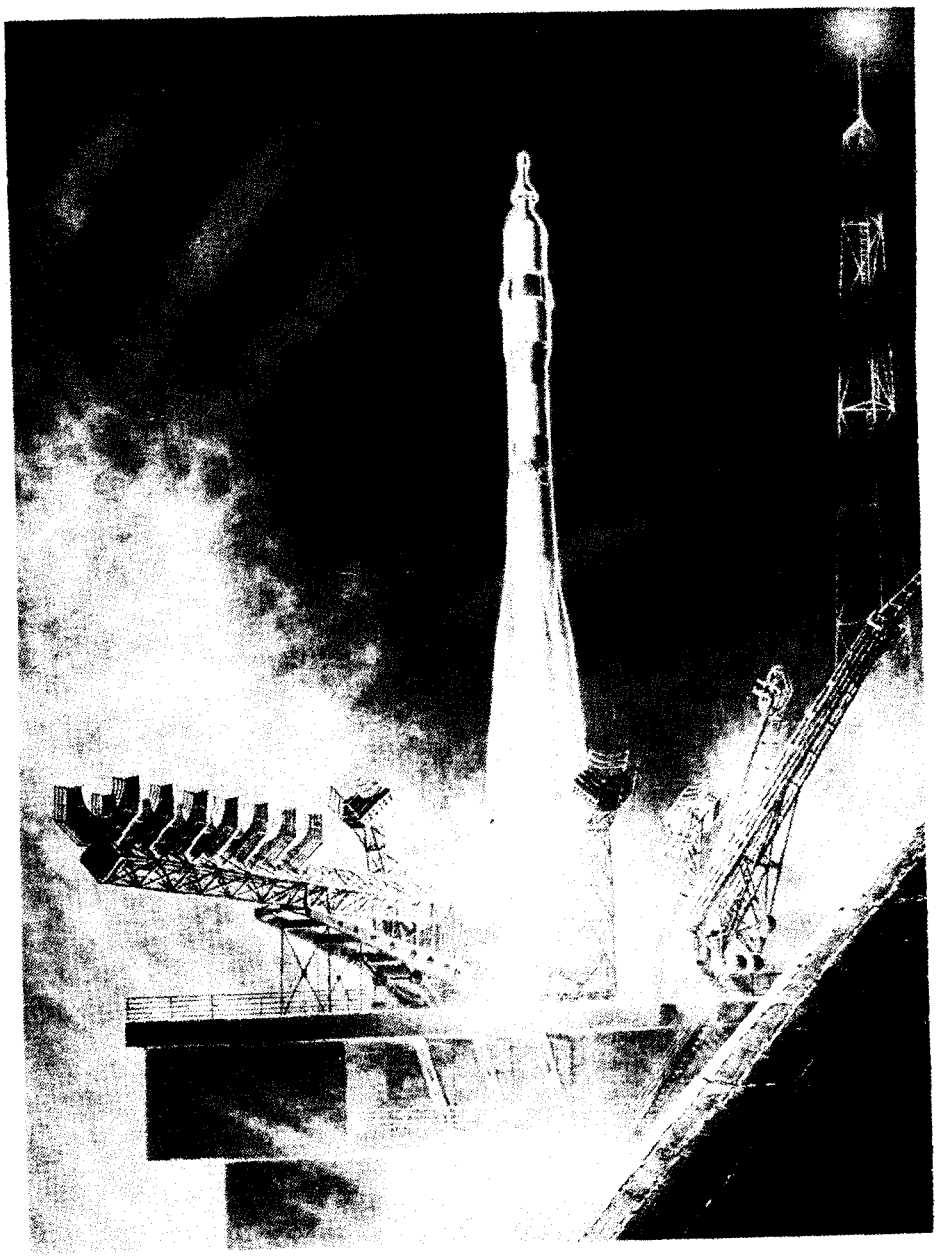
the first extraterrestrial art exhibit



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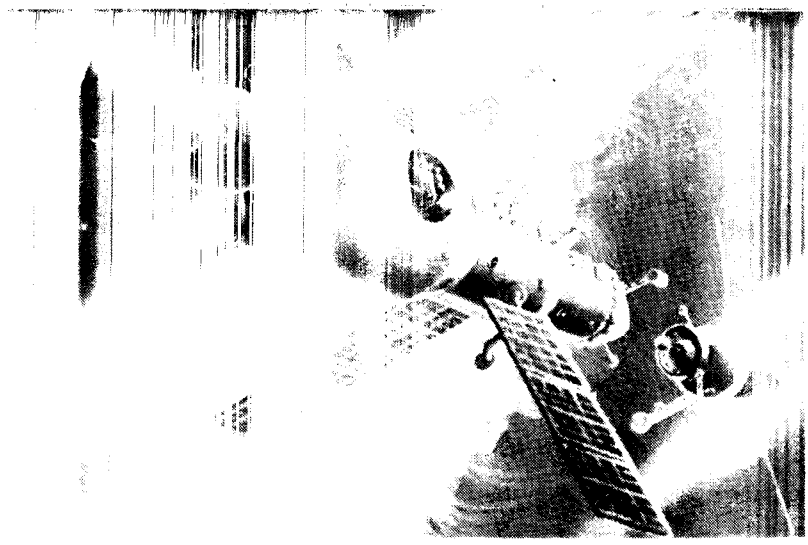

walk-in-space but our EVA was a relatively short one. We felt the paintings were a 'homey touch' and left them behind aboard Salyut 6 to be enjoyed by the next crew of cosmonauts."

Andrei Sokolov has been teamed with cosmonaut Alexei Leonov, an amateur artist, for about ten years. At least five art books have been published reproducing their works. The most recent of these, MAN IN THE UNIVERSE, contains sketches made by Leonov in orbit during the Apollo/Soyuz mission and some fine watercolors by him. Leonov has presented his paintings to the Smithsonian's National Air and Space Museum, Washington, D.C., where they are on exhibit in the museum's art gallery.

Sokolov's work runs the gamut from illustrative and documentary space art, through projected concepts of future space missions, to far-out pure fantasy.

Leonov and Sokolov have produced art for a series of Soviet postage stamps and sets of postcard reproductions. These are difficult to find in the U.S., although color slides and postcards of Sokolov's space art are available through Astro Associates.

Frederick C. Durant III

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ing with another suit to stress different muscles, called the "Athlete Suit" (it looks like a giant athletic supporter).

Physical health is not the only aspect of the cosmonauts' condition which doctors are watching on Salyut-6. Particularly on Salyut-5 in 1976, concern had been voiced about sensory deprivation and other psychological problems. To get an accurate measure of the cosmonauts' state of mind (and what pilot has ever volunteered accurate data to psychologists?), the Soviet flight surgeons process air-to-ground voice tapes through a "voice stress analyzer" machine, known in the West as a new method of lie detection. Signs of stress are sought.

With Romanenko and Grechko's stay of 96½ days, the problems of psychological maintenance of the crewmen seem to have been mastered. Each week, the cosmonauts talked with their families by radio. They were read news reports and were kept informed of the results from laboratories where their film and samples had been delivered via earlier visits. Each month they received mail from home, and fresh fruits. On board was a tape cassette recorder, as on Skylab, and a unique television screen which could be used to view the Salyut exterior, the Earth, or videotape cassettes of entertainment or instructional material.

In addition to all these engineering tests, the Soyuz-26/Salyut-6 cosmonauts still found time to conduct some useful scientific experiments as well. Primarily, however, Romanenko and Grechko ("the Roman" and "the Greek," a classic team) devoted their time and energies to the technological experiments planned to demonstrate the effectiveness of a new family of operational space capabilities.

Biology was covered with a series of tests on the growth of seeds, fruitflies, and chlorella. An impressive materials processing furnace called the "SPLAV" ("Alloy") was unveiled, as was an equally impressive cryogenic far-infrared telescope called the BKT-1M ("onboard cryogenic telescope mark one, modified"), which operates at the temperature of liquid helium. An East German multispectral earth resources camera, the MKF-6M, was also used, once the Soyuz-27 crew (launched January 10) replaced film which had spoiled.

Throughout 1978, further missions will be mounted to the Salyut, including new endurance runs, crew rotation, and visits by specialized Soyuz craft carrying scientists and non-Russian cosmonauts. The symbolic flights of the Czech, Polish, and East German cosmonauts, while primarily of political value to Moscow, serve also to highlight the arrival of a truly international space effort. New foreign cosmonauts arrived in Russia in March and will fly in 1979-1983. There will be one each; Hungarian, Romanian, Bulgarian, Mongolian, and Cuban (probably black) to follow in the footsteps of Vladimir Remek, the first non-Russian non-American spaceman. But each country is sending *two* young

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Russian-speaking jet pilots for space training.

Half of these foreign cosmonauts will fly, and half will follow other footsteps: those of Oldrich Pelczak, Remek's Czech backup cosmonaut, who did not fly, and now never will. There are only good political reasons to fly a single representative of each country.

The guest cosmonaut program might evolve into something valuable if real foreign specialists are invited, starting with scientists (not jet pilots) from Soviet bloc countries, and leading to scientists from other countries which have cooperated in space exploration with the USSR, countries like France, India, Sweden, and . . . the United States.

There are reports that Russia's first true scientist-cosmonauts are now also in training. A new group of physician-cosmonauts has been talked about since late 1977 (in 1964, a doctor received four months of preparation and went up on Voskhod-1 for a day, but that was another one-shot stunt rather than an extended program). Other researchers could include astronomers, biologists, and geologists.

Another important piece of data involves the results of a Soviet medical experiment which was disclosed late in 1977. Twenty test subjects were kept in bed for six months, simulating weightlessness and various exercise and dietary means of combatting its debilitating effects. Chief Soviet space doctor Oleg Gazenko announced his conclusions: "It can be said with certainty that the limits for man's flight in space goes beyond six months."

Doctors jubilantly went even further after Romanenko and Grechko climbed out of their capsule at the end of the 96-day flight. Chief flight surgeon Anatoliy Yegorov said that flights of a year or more are feasible. So the new space endurance record may not stand for long, and when it is broken, it may be doubled or tripled!

Overshadowed by Salyut-6 and Progress-1, a mysterious group of other spacecraft test flights has been observed by Western experts. So far, their full purpose remains obscure. But they testify to the imminence of something big.

Four families have been noticed, for convenience sake designated by the Cosmos number of typical shots. All these tests have taken place under the guise of Cosmos satellites, which Moscow claims are scientific payloads designed to study the universe or aid the national economy. It's a cover story—and it keeps its secrets well.

The families are: "881," some sort of heavy twin spacecraft landing tests; "670," possibly a much improved Soyuz spacecraft; "758," a military reconnaissance application of the Soyuz spacecraft; and "929," a giant space tugboat probably intended for use in the assembly of separately launched space station modules.

Two shots have been made in the "881" family, and, if guesses are right, a manned flight might follow shortly. Essentially, the extremely baffling mission calls for an on-the-hour night

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launch, with two payloads placed into orbit by a Proton booster. Both payloads carry out an automatic retrofire and both land at sunrise back in the Soviet Union. If the spacecraft are similar, they each weigh about 9000 kg, substantially more than a Soyuz. Guesses include a new Soviet lunar craft, an improved Soyuz, or a bailout cabin for a large Soviet manned spacecraft, perhaps the Space Shuttle. Beyond these guesses, nobody knows.

The "670" shots began in mid-1974 and have had one launch per year of what looks to be a highly modified Soyuz. The two man restriction has been very severe, for the present Soyuz design, so this spacecraft might be a larger Soyuz, perhaps even without an orbital module but with room for three to five cosmonauts. It might even be an entirely new manned spacecraft. Nobody knows.

The "758" family appeared in 1975, with one shot the previous year which could have been a precursor. About two flights per year have been noticed, with a number of failures in orbit. Unlike the other mystery satellites, these spacecraft are launched from the military cosmodrome at Plesetsk. According to British space experts, the vehicles are a bit shorter than the standard Soyuz spacecraft. Their telemetry systems are characteristic of reconnaissance satellites, so it is suspected that the "758" family is being groomed to replace the now outdated Vostok-based reconnaissance satellites which have been launched at a rate of thirty per year since 1962. A Soyuz-based system could remain in space two to three times as long as the present Vostok-based unmanned space spies.

Cosmos-929 was probably the biggest enigma of the Soviet space program in 1977. It was launched with a routine Cosmos cover story on July 17, and it spent the next two hundred days teasing and frustrating Western observers before it dove back into the atmosphere on a deliberate space suicide on Feb 2. From ground observations, experts have deduced that Cosmos-929 was big (maybe 18,000 kg or more), with large solar panels. It sent typical man-related telemetry, but in a baffling 'twinned' mode. For six months, it seemed to be going through a series of phantom rendezvous and coasting maneuvers. Why?

The purpose of the Cosmos-929 type spacecraft may fit into statements made over the past few years by Soviet officials. They have made no secret of their plans to assemble future space stations from separately launched components. Such a technique would sidestep the current size restrictions imposed by the payload capability of their largest space booster, the Proton. (A rumored Soviet-Saturn-V super booster allegedly made several disastrous test flights in 1969-1972. Nothing has been heard from it since).

Independent modules, each weighing 20,000 kg, will be linked together, these scientists have forecast. Perhaps they will be attached end to end in a long cylinder, or perhaps they will extend out from a special hub module

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like spokes; both concepts have been discussed, and possibly neither has yet been finally chosen.

To have these separate modules link up in space, it might be necessary to equip each section with its own power, propulsion, and guidance systems. This could be costly, wasteful, and unreliable. Instead, the modules will be launched as bulk cargo with only the most primitive stabilization system. A specialized spacecraft, already in orbit, will chase down the modules, hook onto them, and herd them one by one to the assembly area.

The Soviets call this spacecraft a "space crane," or a "space tug" ("KOSMO-KRAN" or "KOSMO-BUKSIR"). It could operate manned or automatically. It could link up with Progress tankers from time to time to refuel.

Could Cosmos-929 have been the first test flight of such a spacecraft? Observers suspect so. It exhibited the necessary lifetime, reliability, and maneuver capability (more than 250 meters per second of velocity change, without refueling). It seemed to be equipped with dual redundant telemetry systems, and large solar panels. A modified Soyuz command module may also have been attached.

Observers await further flight tests of the Cosmos-929 spacecraft. Judging from past Soviet practice, the vehicle could become operational this year or next. Indeed, one experiment possibly planned for later in the Salyut-6 mission could involve the launch of another Salyut and of a 'space tug,' and the docking of all three vehicles to create a 60,000 kg space station.

Do the Russians have a space shuttle? This is another major mystery, and rumors have been flying since mid-1977. Cosmonauts have claimed that a new manned spacecraft is being developed (but that could be the '670' vehicle). Last spring, an East European source told a London journalist that drop tests of a Soviet winged space shuttle were about to begin. In March of this year, *Aviation Week and Space Technology* published a major article, with a drawing, which claimed that such tests had indeed taken place.

European experts say that the vehicle will have an entirely reusable first stage as well, and that the orbiter vehicle will have air breathing engines for use after returning to Earth. The generic name for this spaceship would be "space flier" or "KOSMO-LYOT"; an Amsterdam source claims that the actual project name at the Central Aviation Hydrodynamics Institute (TSAGI) in Moscow is "ALBATROS."

Why should the Soviets want to develop a space shuttle? That's not such an easy question, but analysis may be revealing.

Both the U.S. and the USSR want to lessen the cost of space operations. For the U.S., this means cheaper launch costs. However, for the USSR, their technique seems to be to concentrate on extending the lifetime of satellites once they are placed into orbit. Better electronics is called for, not a new launch vehicle.

But the Soviets have another requirement. If large permanently

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manned space stations are to be built soon, a better personnel carrier must be developed. It might be a five-man Soyuz (the "670" family?), or it might be a reusable winged space shuttle.

The American approach calls for a "space moving van." The Soviets need, instead, a "space taxi."

So far, the Soviet space shuttle remains a myth, a rumor, a suggestion possibly supported somehow by a few unexplained space tests of parts of the system. There just are not enough pieces available to solve the puzzle.

What comes next? The test program for Salyut-7 or Salyut-8 may have been forecast by space official Sergey Grishin last February: "In the future, various docking mechanisms of orbiting stations will be used for dockings by transport ships, and by individual scientific modules outfitted with instruments and equipment . . . Moving into a laboratory which has arrived, cosmonauts will begin special operations without wasting time on transferring equipment. After research is completed, the module may be separated permanently or temporarily, to be replaced by a new one which has arrived from Earth."

Such modules, continued Grishin, could be for technological purposes, such as materials processing, or they could be specialized medical-biological laboratories. These applications are significant because other Soviet statements seem to indicate that the USSR is determined to inaugurate the industrial use of space manufactured materials very soon. At first it would be primarily symbolic tokenism, but it would represent another Soviet space first, and it would represent the dawn of what Harry Stine appropriately terms "the third industrial revolution." The USSR is determined to lead that revolution.

Within two or three years, one can predict the existence of several specialized Soviet orbital outposts. Some will have multiple replaceable modules, with permanent crews of ten or twenty people (Russia's women-in-space program is bound to be restarted, if only in response to American women astronauts). Other space stations will be for military reconnaissance. Orbital factories will be set up in embryonic form. Life support systems will grow increasingly closed loop, with water, air, and food recycled to above 95%, probably within a decade.

If artificial gravity (a misnomer—the term should be pseudogravity) is needed, spinning stations will be built. Already, engineers have lived on board a capsule at the end of a long centrifuge arm in the Orbita project, studying the effects of Coriolis force.

In Russian, there is a word for future space habitats: "KOSMO-GRAD," or "space city." We might call it a space colony, once people living there begin to consider it home, and once children are born there.

"Humankind will not remain forever on the Earth, but in search of energy and room will at first timidly venture beyond the fringes of the atmosphere, and then boldly move

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forth to occupy all of circumsolar space." Those words are engraved in gold lettering on the Tsiolkovskiy monument in Kaluga, south of Moscow, and they are engraved more deeply in the souls of space minded people everywhere.

Someday soon, they may be engraved over the main docking port of the Kosmograd, space colony #1. In Russian. ■

James Oberg works in Mission Control, Houston. He has studied the Soviet space program for more than twenty years. His opinions and conclusions are his own and do not necessarily reflect the opinions of NASA.

UPDATE

As expected, the second expedition to Salyut-6 began in June with the launch of Soyuz-29. A brief visit was made by Soyuz-30 at the end of the month, carrying the first (and last for a long time) Polish cosmonaut; a few days later another Progress automatic supply ship was launched with more than ninety days of provisions.

The crew of Soyuz-29 included one surprise: a second chance for Colonel Vladimir Kovalyonok, who had been commander of the ill-fated Soyuz-25 attempt the previous October. Apparently the failure of that mission had not *been blamed on the crew as had been suspected. Kovalyonok's flight engineer was Aleksandr Ivanchenkov, who had been paired with Romanenko on the Soyuz-25 backup crew and then with Kovalyonok, had been on the backup crews of Soyuz-26 and Soyuz-27.*

On August 2, 1978, the Salyut-6 crew surpassed the last U.S. manned space record, when the total cumulative man-hours in space of the USSR exceeded that of the U.S. for the first time since 1965 (the figure was approximately 22,000 man-hours). There is little likelihood that the U.S. will retrieve that record or any other major manned space flight record this century.

One problem which seems to have cropped up on Salyut-6 is in the field of extravehicular activity (EVA—spacewalks). On the first Soviet spacewalk in almost nine years, carried out on Dec. 20 by Romanenko and Grechko, the crew was twice in extreme danger. First, Romanenko stood up in the hatch to look around although he had not been authorized to conduct an EVA; he lost his grip and floated off, to his horror realizing that his safety line had not been attached. Grechko, in his own words, grabbed the line near the end and was able to haul Romanenko back in. A few moments later, when back inside, the shaken cosmonauts discovered that the pressure bleed valve used to dump air from the airlock was stuck in the open position, dooming the men. The ground crew suggested it was only an indicator failure and told the cosmonauts to try to pressurize the airlock anyway. It worked.

Since then, there have been no further spacewalks and none are reportedly planned on Soyuz-29.

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Broeck Steadman

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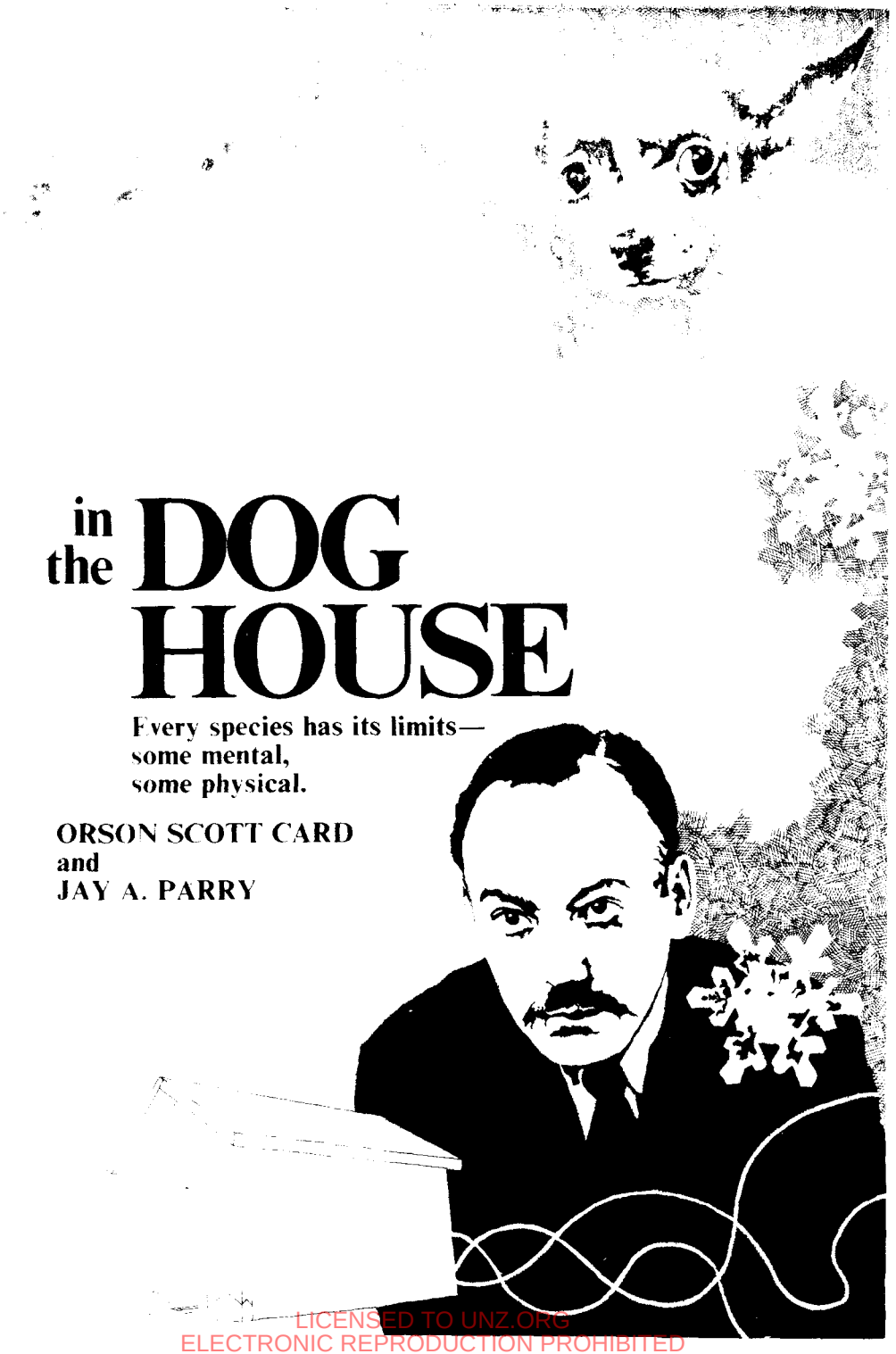

in the DOG HOUSE

Every species has its limits—
some mental,
some physical.

ORSON SCOTT CARD
and
JAY A. PARRY

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As Mklikluln awoke, he felt the same depression that he had felt as he went to sleep ninety-seven years ago. And though he knew it would only make his depression worse, he immediately scanned backward as his ship decelerated, hunting for the star that had been the sun. He couldn't find it. Which meant that even with acceleration and deceleration time, the light from the nova—or supernova—had not yet reached the system he was heading for.

Sentimentality be damned, he thought savagely as he turned his attention to the readouts on the upcoming system. So the ice cliffs will melt, and the sourland will turn to huge, planet-spanning lakes. So the atmosphere will fly away in the intense heat. Who cares? Humanity was safe.

As safe as bodiless minds can be, resting in their own supporting mindfields somewhere in space, waiting for the instantaneous message that *here* is a planet with bodies available, *here* is a home for the millions for whom there had been no spaceships, *here* we can once again—

Once again what?

No matter how far we search, Mklikluln reminded himself, we have no hope of finding those graceful, symmetrical, hexagonally delicate bodies we left behind to burn.

Of course, Mklikluln still had his, but only for a while.

Thirteen true planetary bodies, two of which co-orbited as binaries in the third position. Ignoring the gas giants and the crusty pebbles outside the habitable range, Mklikluln got increasingly more complex readouts on the binary and the single in the fourth orbit, a red midget.

The red was dead, the smaller binary even worse, but the blue-green larger binary was ideal. Not because it matched the conditions on Mklikluln's home world—that would be impossible. But because it had life. And not only life—intelligent life.

Or at least fairly bright life. Energy output in the sub- and supravisible spectra exceeded reflection from the star (No, I must try to think of it as the *sun*) by a significant degree. Energy clearly came from a breakdown of carbon compounds, just what current theory (current? ninety-seven-year-old) had assumed would be the logical energy base of a developing world in this temperature range. The professors would be most gratified.

And after several months of maneuvering his craft, he was in stationary orbit around the larger binary. He began monitoring communications on the supravisible wavelengths. He learned the language quickly, though of course he couldn't have produced it with his own body, and sighed a little when he realized that the aliens, like his own people, called their little star "the sun," their minor binary "the moon," and their own humble, overhot planet "earth" (terra, mund, etc.). The array of languages was impressive—to think that people would go to all the trouble of thinking out hundreds of completely different ways of

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communicating for the sheer love of the logical exercise was amazing—what minds they must have!

For a moment he fleetingly thought of taking over for his people's use the bipedal bodies of the dominant intelligent race, but law was law, and his people would commit mass suicide if they realized—as they would surely realize—that they had gained their bodies at the expense of another intelligent race. One could think of such bipedals as being almost human, right down to the whimsical sense of humor that sometimes reminded Mklikluln of his wife (Ah, Glundnindn, and you the pilot who volunteered to plunge into the sun, scooping out the sample that killed you but saved us!); but he refused to mourn.

The dominant race was out. Similar bipedals were too small in population, too feared or misunderstood by the dominant race. Other animals with appropriate populations didn't have body functions that could easily support intelligence without major revisions—and many were too weak to survive unaided, too short of lifespan to allow civilization.

And so he narrowed down the choices to two quadrupeds, of very different sorts, of course, but well within the limits of choice: both had full access to the domiciles of the dominant race; both had adequate body structure to support intellect; both had potential means of communicating; both had sufficient population to hold all the encapsulated minds waiting in the space between the stars.

Mklikluln did the mental equivalent of flipping a coin—would have flipped a coin, in fact, except that he had neither hand nor coin nor adequate gravity for flipping.

The choice made—for the noisy one

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of greater intelligence that already had the love of most members of the master race—he set about making plans on how to introduce the transceivers that would call his people. (The dominant race must not know what is happening; and it can't be done without the cooperation of the dominant race.)

Mklikluln's six points vibrated just a little as he thought.

Abu was underpaid, underfed, underweight, and within about twelve minutes of the end of his lifespan. He was concentrating on the first problem, however, as the fourth developed.

"Why am I being paid less than Faisel, who sits on his duff by the gate while I walk back and forth in front of the cells all day?" he righteously said—under his breath, of course, in case his supervisor should overhear him. "Am I not as good a Muslim? Am I not as smart? Am I not as loyal to the Party?"

And as he was immersed in righteous indignation at man's inhumanity, not so much to mankind as to Abu ibn Assur, a great roaring sound tore through the desert prison, followed by a terrible, hot, dry, sand-stabbing wind. Abu screamed and covered his eyes—too late, however, and the sand ripped them open, and the hot air dried them out.

That was why he didn't see the hole in the outside wall of cell 23, which held a political prisoner condemned to die the next morning for having murdered his wife—normally not a political crime, except when the wife was also the daughter of somebody who could make phone calls and get people put in prison.

That was why he didn't see his supervisor come in, discover cell 23 empty, and then aim his submachine-gun at Abu as the first step to setting up the hapless guard as the official scapegoat for this fiasco. Abu did, however, hear and feel the discharge of the gun, and wondered vaguely what had happened as he died.

Mklikluln stretched the new arms and legs (the fourness of the body, the two-sidedness, the overwhelming sexuality of it—all were amazing, all were delightful) and walked around his little spacecraft. And the fiveness and tenness of the fingers and toes! (What we could have done with fingers and toes! except that we might not have developed thoughttalk, then, and would have been tied to the vibration of air as are these people.) Inside the ship he could see his own body melting as the hot air of the Kansas farmland raised the temperature above the melting point of ice.

He had broken the law himself, but could see no way around it. Necessary as his act had been, and careful as he had been to steal the body of a man doomed anyway to die, he knew that his own people would try him, convict him, and execute him for depriving an intelligent being of life.

But in the meantime, it was a new body and a whole range of sensations.

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He moved the tongue over the teeth. He made the buzzing in his throat that was used for communication. He tried to speak.

It was impossible. Or so it seemed, as the tongue and lips and jaw tried to make the Arabic sounds the reflex pathways were accustomed to, while Mklikluln tried to speak in the language that had dominated the airwaves.

He kept practicing as he carefully melted down his ship (though it was transparent to most electromagnetic spectra it might still cause comment if found) and by the time he made his way into the nearby city, he was able to communicate fairly well. Well enough anyway, to contract with the Kansas City Development Corporation for the manufacture of the machine he had devised; with Farber, Farber and Maynard to secure patents on every detail of the machinery; and with Sidney's carpentry shop to manufacture the doghouses.

He sold enough diamonds to pay for the first 2,000 finished models. And then he hit the road, humming the language he had learned from the radio. "It's the real thing, Coke is," he sang to himself. "Mr. Transmission will put in commission the worst transmissions in town."

The sun set as he checked into a motel outside Manhattan, Kansas. "How many?" asked the clerk.

"One," said Mklikluln.

"Name?"

"Robert," he said, using a name he had randomly chosen from among the many thousands mentioned on the airwaves. "Robert Redford."

"Ha-ha," said the clerk. "I bet you get teased about that a lot."

"Yeah. But I get in to see a lot of important people."

The clerk laughed. Mklikluln smiled. Speaking was fun. For one thing, you could lie. An art his people had never learned to cultivate.

"Profession?"

"Salesman."

"Really, Mr. Redford? What do you sell?"

Mklikluln shrugged, practicing looking mildly embarrassed. "Doghouses," he said.

Royce Jacobsen pulled open the front door of his swelteringly hot house and sighed. A salesman.

"We don't want any," he said.

"Yes you do," said the man, smiling.

Royce was a little startled. Salesmen usually didn't argue with potential customers—they usually whined. And those that did argue rarely did it with such calm self-assurance. The man was an ass, Royce decided. He looked at the sample case. On the side were the letters spelling out: "Doghouses Unlimited."

"We don't got a dog," Royce said.

"But you *do* have a very warm house, I believe," the salesman said.

"Yeah. Hotter'n Hades, as the preachers say. Ha." The laugh would have been bigger than one *Ha*, but Royce was hot and tired and it was only a salesman.

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"But you have an air conditioner."

"Yeah," Royce said. "What I don't have is a permit for more than a hundred bucks worth of power from the damnpowercompany. So if I run the air conditioner more than one day a month, I get the refrigerator shut down, or the stove, or some other such thing."

The salesman looked sympathetic.

"It's guys like me," Royce went on, "who always get the short end of the stick. You can bet your boots that the mayor gets all the air conditioning he wants. You can bet your boots *and* your overalls, as the farmers say, ha ha, that the president of the damnpowercompany takes three hot showers a day and three cold showers a night and leaves his windows open in the winter, too, you can bet on it."

"Right," said the salesman. "The power companies own this whole country. They own the whole world, you know? Think it's any different in England? In Japan? They got the gas, and so they get the gold."

"Yeah," Royce agreed. "You're my kind of guy. You come right in. House is hot as Hades, as the preachers say, ha ha ha, but it sure beats standing in the sun."

They sat on a beat-up looking couch and Royce explained exactly what was wrong with the damnpowercompany and what he thought of the damnpowercompany's executives and in what part of their anatomy they should shove their quotas, bills, rates, and periods of maximum and minimum use. "I'm sick to death of having to take a shower at 2:00 AM!" Royce shouted.

"Then do something about it!" the salesman rejoindered.

"Sure. Like what?"

"Like buy a doghouse from me."

Royce thought that was funny. He laughed for a good long while.

But then the salesman started talking very quietly, showing him pictures and diagrams and cost analysis papers that proved—what?

"That the solar energy utilizer built into this doghouse can power your entire house, all day every day, with four times as much power as you could use if you turned on all your home appliances all day every day, for exactly zero once you pay me this simple one-time fee."

Royce shook his head, though he coveted the doghouse. "Can't. Illegal. I think they passed a law against solar energy thingies back in '85 or '86, to protect the power companies."

The salesman laughed. "How much protection do the power companies need?"

"Sure," Royce answered, "it's me that needs protection. But the meter reader—if I stop using power, he'll report me, they'll investigate—"

"That's why we don't put your whole house on it. We just put the big power users on it, and gradually take more off the regular current until you're paying what, maybe fifteen dollars a month. Right? Only instead of fifteen dollars a month and cooking over a fire and sweating to death in a hot house, you've got the air condi-

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tioner running all day, the heater running all day in the winter, showers whenever you want them, and you can open the refrigerator as often as you like."

Royce still wasn't sure.

"What've you got to lose?" the salesman asked.

"My sweat," Royce answered. "You hear that? My sweat. Ha ha ha ha."

"That's why we build them into doghouses—so that nobody'll suspect anything."

"Sure, why not?" Royce asked. "Do it. I'm game. I didn't vote for the damncongressman who voted in that stupid law anyway."

The air conditioner hummed as the guests came in. Royce and his wife, Junie, ushered them into the living room. The television was on in the family room and the osterizer was running in the kitchen. Royce carelessly flipped on a light. One of the women gasped. A man whispered to his wife. Royce and Junie carelessly began their conversation—as Royce *left the door open.*

A guest noticed it—Mr. Detweiler from the bowling team. He said, "Hey!" and leaped from the chair toward the door.

Royce stopped him, saying, "Never mind, never mind, I'll get it in a minute. Here, have some peanuts." And the guests all watched the door in agony as Royce passed the peanuts around, then (finally!) went to the door to close it.

"Beautiful day outside," Royce said, holding the door open a few minutes longer.

Somebody in the living room mentioned a name of the deity. Somebody else countered with a one word discussion of defecation. Royce was satisfied that the point had been made. He shut the door.

"Oh, by the way," he said. "I'd like you to meet a friend of mine. His name is Robert Redford."

Gasp, gasp, of course you're joking, Robert Redford, what a laugh, sure.

"Actually, his name *is* Robert Redford, but he isn't, of course, the all time greatest star of stage, screen, and the Friday Night Movie, as the disc jockeys say, ha ha. He is, in short, my friends, a doghouse salesman."

Mklikluln came in then, and shook hands all around.

"He looks like an Arab," a woman whispered.

"Or a Jew," her husband whispered back. "Who can tell?"

Royce beamed at Mklikluln and patted him on the back. "Redford here is the best salesman I ever met."

"Must be, if he sold you a doghouse, and you not even got a dog," said Mr. Detweiler of the bowling league, who could sound patronizing because he was the only one in the bowling league who had ever had a perfect game.

"Neverthemore, as the raven said, ha ha ha, I want you all to see my doghouse." And so Royce led the way past a kitchen where all the lights were on, where the refrigerator was stand-

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ing open ("Royce, the fridge is open!" "Oh, I guess one of the kids left it that way." "I'd kill one of my kids that did something like that!"), where the stove *and* microwave *and* osterizer *and* hot water were all running at once. Some of the women looked faint.

And as the guests tried to rush through the back door all at once, to conserve energy, Royce said, "Slow down, slow down, what's the panic, the house on fire? Ha ha ha." But the guests still hurried through.

On the way out to the doghouse, which was located in the dead center of the back yard, Detweiler took Royce aside.

"Hey, Royce, old buddy. Who's your touch with the damnpowercompany? How'd you get your quota upped?"

Royce only smiled, shaking his head. "Quota's the same as ever, Detweiler." And then, raising his voice just a bit so that everybody in the back yard could hear, he said, "I only pay fifteen bucks a month for power as it is."

"Woof woof," said a small dog chained to the hook on the doghouse.

"Where'd the dog come from?" Royce whispered to Mklikluln.

"Neighbor was going to drown 'im," Mklikluln answered. "Besides, if you don't have a dog the power company's going to get suspicious. It's cover."

Royce nodded wisely. "Good idea, Redford. I just hope this party's a good idea. What if somebody talks?"

"Nobody will," Mklikluln said confidently.

And then Mklikluln began showing the guests the finer points of the doghouse.

When they finally left, Mklikluln had twenty-three appointments during the next two weeks, checks made out to Doghouses Unlimited for $221.23, including taxes, and many new friends. Even Mr. Detweiler left smiling, his check in Mklikluln's hand, even though the puppy had pooped on his shoe.

"Here's your commission," Mklikluln said as he wrote out a check for three hundred dollars to Royce Jacobsen. "It's more than we agreed, but you earned it," he said.

"I feel a little funny about this," Royce said. "Like I'm conspiring to break the law or something."

"Nonsense," Mklikluln said. "Think of it as a Tupperware party."

"Sure," Royce said after a moment's thought. "It's not as if I actually did any selling myself, right?"

Within a week, however, Detweiler, Royce, and four other citizens of Manhattan, Kansas, were on their way to various distant cities of the United States, Doghouses Unlimited briefcases in their hands.

And within a month, Mklikluln had a staff of three hundred in seven cities, building doghouses and installing them. And into every doghouse went a frisky little puppy. Mklikluln did some figuring. In about a year, he decided. One year and I can call my people.

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"What's happened to power consumption in Manhattan, Kansas?" asked Bill Wilson, up-and-coming young executive in the statistical analysis section of Central Kansas Power, otherwise known as the damnpowercompany.

"It's gotten lower," answered Kay Block, relic of outdated affirmative action programs in Central Kansas Power, who had reached the level of records examiner before the ERA was repealed to make our bathrooms safe for mankind.

Bill Wilson sneered, as if to say, "That much I knew, woman." And Kay Block simpered, as if to say, "Ah, the boy has an IQ after all, eh?"

But they got along well enough, and within an hour they had the alarming statistic that power consumption in the city of Manhattan, Kansas, was down by forty percent.

"What was consumption in the previous trimester?"

Normal. Everything normal.

"Forty percent is ridiculous," Bill fulminated.

"Don't fulminate at me," Kay said, irritated at her boss for raising his voice. "Go yell at the people who unplugged their refrigerators!"

"No," Bill said. "*You* go yell at people who unplugged their refrigerators. Something's gone wrong there, and if it isn't crooked meter readers, it's people who've figured out a way to jimmy the billing system."

After two weeks of investigation, Kay Block sat in the administration building of Kansas State University (9-2 last football season, coming *that* close to copping the Plains Conference pennant for '98) refusing to admit that her investigation had turned up a big fat zero. A random inspection of thirty-eight meters showed no tampering at all. A complete audit of the local branch office's books showed no doctoring at all. And a complete examination of KSU's power consumption figures showed absolutely nothing. No change in consumption—no change in billing system—and yet a sharp drop in electricity use.

"The drop in power use may be localized," Kay suggested to the white-haired woman from the school who was babysitting her through the process. "The stadium surely uses as much light as ever—so the drop must be somewhere else, like in the science labs."

The white-haired woman shook her head. "That may be so, but the figures you see are the figures we've got."

Kay sighed and looked out the window. Down from the window was the roof of the new Plant Science Building. She looked at it as her mind struggled vainly to find something meaningful in the data she had. Somebody was cheating—but how?

There was a doghouse on the roof of the Plant Science Building.

"What's a doghouse doing on the roof of that building?" asked Kay.

"I would assume," said the white-haired woman, "for a dog to live in."

"On the roof?"

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The white-haired woman smiled. "Fresh air, perhaps," she said.

Kay looked at the doghouse awhile longer telling herself that the only reason she was suspicious was because she was hunting for *anything* unusual that could explain the anomalies in the Manhattan, Kansas, power usage pattern

"I want to see that doghouse," she said

"Why?" asked the white-haired lady "Surely you don't think a generator could hide in a doghouse! Or solar-power equipment! Why, those things take whole buildings!"

Kay looked carefully at the white-haired woman and decided that she protested a bit too much. "I insist on seeing the doghouse," she said again.

The white-haired woman smiled again "Whatever you want, Miss Block Let me call the custodian so he can unlock the door to the roof."

After the phone call they went down the stairs to the main floor of the administration building, across the lawns, and then up the stairs to the roof of the Plant Science Building. "What's the matter, no elevators?" Kay asked sourly as she panted from the exertion of climbing the stairs.

"Sorry," the white-haired woman said "We don't build elevators into buildings anymore. They use too much power. Only the power company can afford elevators these days."

The custodian was at the door of the roof, looking very apologetic.

"Sorry if old Rover's been causin' trouble ladies. I keep him up on the roof nowadays, ever since the break-in attempt through the roof door last spring. Nobody's tried to jimmy the door since."

"Arf," said a frisky, cheerful looking mix between an elephant and a Labrador retriever (just a quick guess, of course) that bounded up to them.

"Howdy, Rover old boy," said the custodian. "Don't bite nobody."

"Arf," the dog answered, trying to wiggle out of his skin and looking as if he might succeed. "Gurrarf."

Kay examined the roof door from the outside. "I don't see any signs of anyone jimmying at the door," she said.

"Course not," said the custodian. "The burglars was seen from the administration building before they could get to the door."

"Oh," said Kay. "Then why did you need to put a dog up here?"

"Cause what if the burglars hadn't been seen?" the custodian said, his tone implying that only a moron would have asked such a question.

Kay looked at the doghouse. It looked like every other doghouse in the world. It looked like cartoons of doghouses, if fact, it was so ordinary. Simple arched door. Pitched roof with gables and eaves. All it lacked was a water dish and piles of doggy-do and old bones. No doggy-do?

"What a talented dog," Kay commented. "He doesn't even go to the bathroom."

"Uh," answered the custodian, "he's really housebroken. He just won't go until I take him down from

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here to the lawn, will ya Rover?"

Kay surveyed the wall of the roof-access building they had come through. "Odd. He doesn't even mark the walls."

"I told you. He's really housebroken. He wouldn't think of mucking up the roof here."

"Arf," said the dog as it urinated on the door and then defecated in a neat pile at Kay's feet. "Woof woof woof," he said proudly.

"All that training," Kay said, "and it's all gone to waste."

Whether the custodian's answer was merely describing what the dog had done or had a more emphatic purpose was irrelevant. Obviously the doghouse was not normally used for a dog. And if that was true, what was a doghouse doing on the roof of the Plant Science Building?

The damnpowercompany brought civil actions against the city of Manhattan, Kansas, and a court injunction insisted that all doghouses be disconnected from all electric wiring systems. The city promptly brought countersuit against the damnpowercompany (a very popular move) and appealed the court injunction.

The damnpowercompany shut off all the power in Manhattan, Kansas.

Nobody in Manhattan, Kansas, noticed, except the branch office of the damnpowercompany, which now found itself the only building in the city without electricity.

The "Doghouse War" got quite a bit of notoriety. Feature articles appeared in magazines about Doghouses Unlimited and its elusive founder, Robert Redford, who refused to be interviewed and in fact could not be found. All five networks did specials on the cheap energy source. Statistics were gathered showing that not only did seven percent of the American public *have* doghouses, but also that 99.8 percent of the American public *wanted* to have doghouses. The 0.2 percent represented, presumably, power company stockholders and executives. Most politicians could add, or had aides who could, and the prospect of elections coming up in less than a year made the result clear.

The antisolar power law was repealed.

The power companies' stock plummeted on the stock market.

The world's most unnoticed depression began.

With alarming rapidity an economy based on expensive energy fell apart. The OPEC monolith immediately broke up, and within five months petroleum had fallen to 38¢ a barrel. Its only value was in plastics and as a lubricant, and the oil producing nations had been overproducing for those needs.

The reason the depression wasn't much noticed was because Doghouses Unlimited easily met the demand for their product. Scenting a chance for profit, the government slapped a huge export tax on the doghouses. Doghouses Unlimited retaliated by publishing the complete plans for the doghouse and declaring that foreign com-

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panies would not be sued for manufacturing it.

The U.S. government just as quickly removed the huge tax, whereupon Doghouses Unlimited announced that the plans it had published were not complete, and continued to corner the market around the world.

As government after government, through subterfuge, bribery, or, in a few cases, popular revolt, were forced to allow Doghouses Unlimited into their countries, Robert Redford (the doghouse one) became even more of a household word than Robert Redford (the old-time actor). Folk legends which had formerly been ascribed to Kuan Yu, Paul Bunyan, or Gautama Buddha became, gradually, attached to Robert Doghouse Redford.

And at last, every family in the world that wanted one had a cheap energy source, an unlimited energy source, and everybody was happy. So happy that they shared their newfound plenty with all God's creatures, feeding birds in the winter, leaving bowls of milk for stray cats, and putting dogs in the doghouses.

Mklikluln rested his chin in his hands and reflected on the irony that he had, quite inadvertently, saved the world for the bipedal dominant race, solely as a byproduct of his campaign to get a good home for every dog. But good results are good results, and humanity—either his own or the bipedals—couldn't condemn him completely for his murder of an Arab political prisoner the year before.

"What will happen when you come?" he asked his people, though of course none of them could hear him. "I've saved the world—but when these creatures, bright as they are, come in contact with our infinitely superior intelligence, won't it destroy them? Won't they suffer in humiliation to realize that we are so much more powerful than they; that we can span galactic distances at the speed of light, communicate telepathically, separate our minds and allow our bodies to die while we float in space unscathed, and then, at the beck of a simple machine, come instantaneously and inhabit the bodies of animals completely different from our former bodies?"

He worried—but his responsibility to his own people was clear. If this bipedal race was so proud they could not cope with inferiority, that was not Mklikluln's problem.

He opened the top drawer of his desk in the San Diego headquarters of Doghouses Unlimited, his latest refuge from the interview seekers, and pushed a button on a small box.

From the box, a powerful burst of electromagnetic energy went out to the eighty million doghouses in southern California. Each doghouse relayed the same signal in an unending chain that gradually spread all over the world—wherever doghouses could be found.

When the last doghouse was linked to the network, all the doghouses simultaneously transmitted something else entirely. A signal that only

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sneered at lightspeed and that crossed light-years almost instantaneously. A signal that called millions of encapsulated minds that slept in their mindfields until they heard the call, woke, and followed the signal back to its source, again at speeds far faster than poor pedestrian light.

They gathered around the larger binary in the third orbit from their new sun, and listened as Mklikluln gave a full report. They were delighted with his work, and commended him highly, before convicting him of murder of an Arabian political prisoner and ordering him to commit suicide. He felt very proud, for the commendation they had given him was rarely awarded, and he smiled as he shot himself.

And then the minds slipped downward toward the doghouses that still called to them.

"Argworfgyardworfl," said Royce's dog as it bounded excitedly through the back yard.

"Dog's gone crazy," Royce said, but his two sons laughed and ran around with the dog as it looped the yard a dozen times, only to fall exhausted in front of the doghouse.

"Griffwigrofrf," the dog said again, panting happily. It trotted up to Royce and nuzzled him.

"Cute little bugger," Royce said.

The dog walked over to a pile of newspapers waiting for a paper drive, pulled the top newspaper off the stack, and began staring at the page.

"I'll be humdingered," said Royce to Junie, who was bringing out the food for their back yard picnic supper. "Dog looks like he's readin' the paper."

"Here, Robby!" shouted Royce's oldest son, Jim. "Here, Robby! Chase a stick."

The dog, having learned how to read and write from the newspaper, chased the stick, brought it back, and instead of surrendering it to Jim's outstretched hand, began to write with it in the dirt.

"Hello, man," wrote the dog. "Perhaps you are surprised to see me writing."

"Well," said Royce, looking at what the dog had written. "Here, Junie, will you look at that. This is some dog, eh?" And he patted the dog's head and sat down to eat. "Now I wonder, is there anybody who'd pay to see a dog do that?"

"We mean no harm to your planet," wrote the dog.

"Jim," said Junie, slapping spoonfuls of potato salad onto paper plates, "you make sure that dog doesn't start scratching around in the petunias."

"C'mere, Robby," said Jim. "Time to tie you up."

"Wrowrf," the dog answered, looking a bit perturbed and backing away from the chain.

"Daddy," said Jim, "the dog won't come when I call anymore."

Impatiently, Royce got up from his chair, his mouth full of chicken salad sandwich. "Doggonit, Jim, if you don't control the dog we'll just have to get rid of it. We only got it for you kids anyway!" And Royce grabbed the

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dog by the collar and dragged it to where Jimmy held the other end of the chain.

"Up!"

"Now you learn to obey, dog, cause I say so, dog. I don't care what tricks you can do, I'll sell ya."

"Over!"

"Right. Now you remember that."

The dog watched them with sad, almost frightened eyes all through dinner. Royce began to feel a little guilty, and gave the dog a leftover bone.

That night Royce and Junie seriously discussed whether to show off the dog's ability to write, and decided against it, since the kids loved the dog and it was cruel to use animals to perform tricks. They were, after all, very enlightened people.

And the next morning they discovered that it was a good thing they'd decided that way—because all anyone could talk about was their dog's newfound ability to write, or unscrew garden hoses, or lay and start an entire fire from a cold empty fireplace to a bonfire. "I got the most talented dog in the world," crowed Detweiler, only to retire into grim silence as everyone else in the bowling team bragged about his own dog.

"Mine goes to the bathroom in the toilet now, and flushes it, too!" one boasted.

"And mine can fold an entire laundry after washing her little paws so nothing gets dirty."

The newspapers were full of the story, too, and it became clear that the sudden intelligence of dogs was a nationwide—a worldwide—phenomenon. Aside from a few superstitious New Guineans, who burned their dogs to death as witches, and some Chinese who didn't let their dogs' strange behavior stop them from their scheduled appointment with the dinnerpot, most people were pleased and proud of the change in their pets.

"Worth twice as much to me now," boasted Bill Wilson, formerly an up-and-coming executive with the damn-powercompany. "Not only fetches the birds, but plucks 'em and cleans 'em and puts 'em in the oven."

And Kay Block smiled and went home to her mastiff, which kept her good company and which she loved very, very much.

"In the five years since the sudden rise in dog intelligence," said Dr. Wheelwright to his class of graduate students in animal intelligence, "we have learned a tremendous amount about how intelligence arises in animals. The very suddenness of it has caused us to take a second look at evolution. Apparently mutations can be much more complete than we had supposed, at least in the higher functions. Naturally, we will spend much of this semester studying the research on dog intelligence, but for a brief overview:

"At the present time it is believed that dog intelligence surpasses that of the dolphin, though it still falls far short of man's. However, while the dolphin's intelligence is nearly useless

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to us, the dog can be trained as a valuable, simple household servant, and at last it seems that man is no longer alone on his planet. To which animal such a rise in intelligence will happen next, we cannot say, any more than we can be certain that such a change *will* happen to any other animal."

Question from the class.

"Oh, well, I'm afraid it's like the big bang theory. We can guess and guess at the cause of certain phenomena, but since we can't repeat the event in a laboratory, we will never be quite sure. However, the best guess at present is that some critical mass of total dog population in a certain ratio to the total mass of dog brain was reached that pushed the entire species over the edge into a higher order of intelligence. This change, however, did not affect *all* dogs equally—primarily it affected dogs in civilized areas, leading many to speculate on the possibility that continued exposure to man was a contributing factor. However, the very fact that many dogs, mostly in uncivilized parts of the world, were *not* affected destroys completely the idea that cosmic radiation or some other influence from outer space was responsible for the change. In the first place, any such influence would have been detected by the astronomers constantly watching every wavelength of the night sky, and in the second place, such an influence would have affected all dogs equally."

Another question from a student.

"Who knows? But I doubt it. Dogs, being incapable of speech, though many have learned to write simple sentences in an apparently mnemonic fashion somewhere between the blind repetition of parrots and the more calculating repetition at high speeds by dolphins—um, how did I get into this sentence? I can't get out!"

Student laughter.

"Dogs, I was saying, are incapable of another advance in intelligence, particularly an advance bringing them to equal intellect with man, because they cannot communicate verbally and because they lack hands. They are undoubtedly at their evolutionary peak. It is only fortunate that so many circumstances combined to place man in the situation he has reached. And we can only suppose that somewhere, on some other planet, some other species might have an even more fortunate combination leading to even higher intelligence. But let us hope not!" said the professor, scratching the ears of his dog, B. F. Skinner. "Right, B. F.? Because man may not be able to cope with the presence of a more intelligent race!"

Student laughter.

"Owrowrf," said B. F. Skinner, who had once been called Hihiwnkn on a planet where white hexagons had telepathically conquered time and space; hexagons who had only been brought to this pass by a solar process they had not quite learned how to control. What he wished he could say was, "Don't worry, professor. Humanity will never be fazed by a higher intelligence. It's too damn proud to notice."

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But instead he growled a little, lapped some water from a bowl, and lay down in a corner of the lecture room as the professor droned on.

It snowed in September in Kansas in the autumn of the year 2000, and Jim (Don't call me Jimmy anymore, I'm grown up) was out playing with his dog Robby as the first flakes fell.

Robby had been uprooting crabgrass with his teeth and paws, a habit much encouraged by Royce and Junie, when Jim yelled, "Snow!" and a flake landed on the grass in front of the dog. The flake melted immediately, but Robby watched for another, and another, and another. And he saw the whiteness of the flakes, and the delicate six-sided figures so spare and strange and familiar and beautiful, and he wept.

"Mommy!" Jim called out. "It looks like Robby's crying!"

"It's just water in his eyes," Junie called back from the kitchen, where she stood washing radishes in front of an open window. "Dogs don't cry."

But the snow fell deep all over the city that night, and many dogs stood in the snow watching it fall, sharing an unspoken reverie.

"Can't we?" again and again the thought came from a hundred, a thousand minds.

"No, no, no," came the despairing answer. For without fingers of *some* kind, how could they ever build the machines that would let them encapsulate again and leave this planet?

And in their despair, they cursed for the millionth time that fool Mklikluln, who had got them into this.

"Death was too good for the bastard," they agreed, and in a worldwide vote they removed the commendation they had voted him. And then they all went back to having puppies and teaching them everything they knew.

The puppies had it easier. They had never known their ancestral home, and to them snowflakes were merely fun, and winter was merely cold. And instead of standing out in the snow, they curled up in the warmth of their doghouses and slept. ■

by Michaele Hahn

SFACROSTIC

SOLUTION

A. Minions, **B.** Iridium, **C.** Depart, **D.** Wyverns, **E.** Instigate, **F.** Colonel Cully, **G.** Hypogeal **H.** Creechie, **I.** Unwary, **J.** Carl Sagan, **K.** Kornbluth, **L.** Onager, **M.** Offends, **N.** Sassafras, **O.** Wizardry, **P.** Yoshihito, **Q.** Nanning, **R.** Delphi, **S.** Habitat, **T.** Ananias McCallister, **U.** Miller, **V.** Profits, **W.** Beings, **X.** Tatters, **Y.** Zygote

A fruitlessly worrying male is a nuisance. The best thing he can do is to disguise his worry and stand staunchly by, impersonating a pillar of strength while performing certain practical and organizational services. Zellaby of Kyle Manor, from *The Midwich Cuckoos* by John Wyndham

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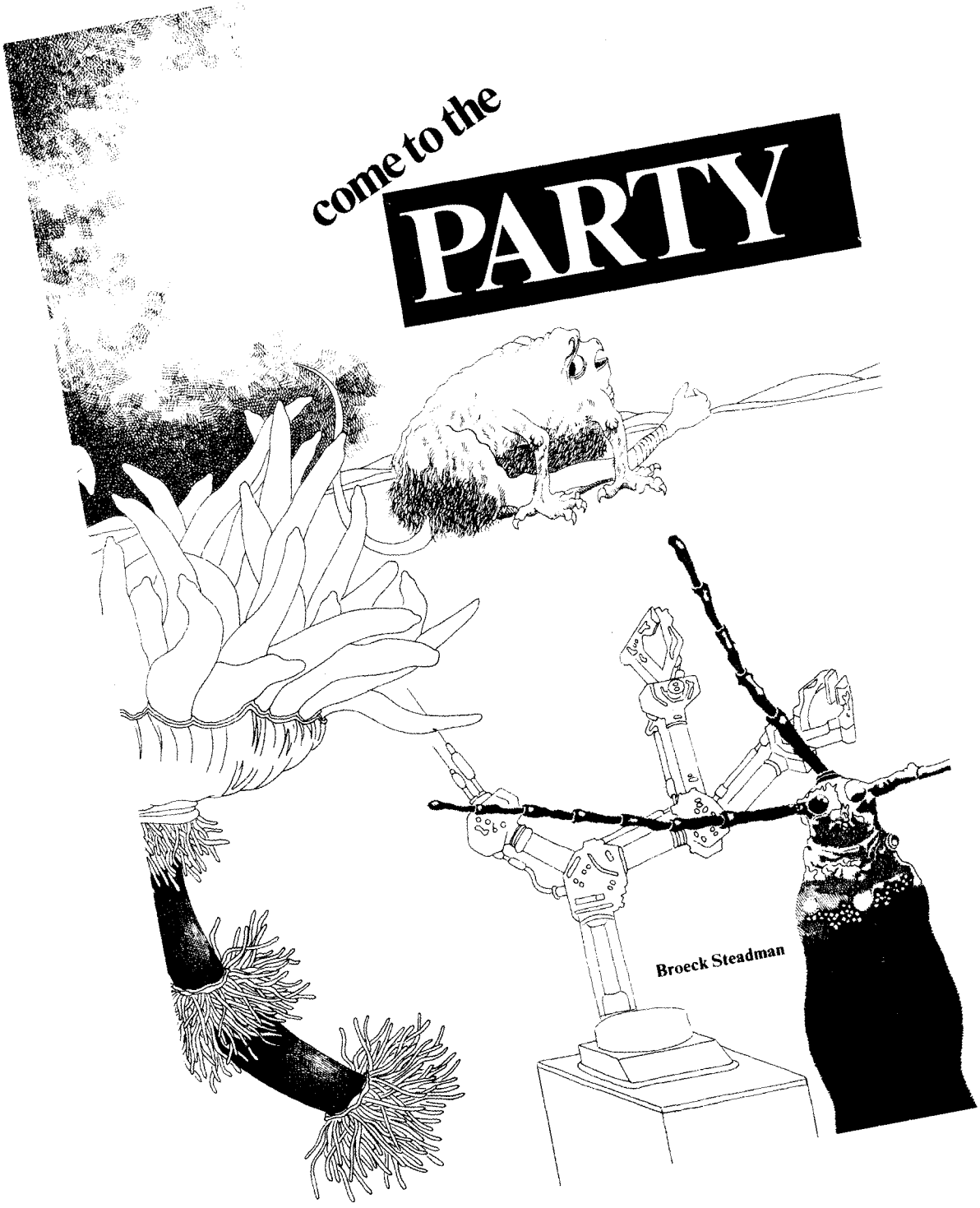

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If a little knowledge is
a dangerous thing,
a lot of knowledge can be
downright terrifying.

FRANK HERBERT and F.M. BUSBY

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Confused, Alex sat back on his protumous, automatically shielding his rear fighting limbs. He realized he didn't know where he was. Thinking back, he retracted and extruded his lower eyes.

He'd been at the Party; he knew that much. Singing and glorching with the best of them. But now he wasn't there. What could have happened?

Alex looked around the dingy landscape—gray and brown, slightly green at the edges. He snuffled the air. It carried interesting smells but none told him what he wanted to know. He recognized the light-between-noons that let him see even farther than usual. Under him the ground was soft, but most ground softened when he sat on it. And the air felt hot—yes, the hot-between-noons. That agreed with the light. But something was wrong. Where was the Party?

Alex ran a claw through the stippled fur of his center forelimb, noticing that instinct had brought drops of multipoison to the tips of claws and fangs.

Then he saw it: the Horizon!

It was wrong. But the fact that it was so close; that was normal for a horizon. But it shouldn't be there at all! Alex puzzled and found one of his throats making a snarl. Something was wrong with his memories; he didn't know where he was, and what was the horizon doing there? He hadn't seen the horizon for a long time . . . very long. That could be a bad sign.

At the Party there was no horizon; there was—what? Trees? Yes, vine trees, thorny vine trees thickly entwined and protective. The prickly barrier kept the Party in one place so nobody got lost—well, not until now, anyway. It kept out the Hoojies, too. Hoojies were all well and good in their own way, but they did spoil a Party.

It can't always be dinner time.

Alex lifted himself far enough to turn, and there, not two jumps away, he saw a tree. Not a vine tree but one of the good kind; its scratchy trunk carried no thorns or poisons. This tree had many uses: to sharpen claws, tone up the fighting limbs, wet on, or scratch against and rub the burrs out of hair and fur. It was no use for dinner, but its leafy branches could hide leftover Hoojie until the next hunger time.

Out of habit, Alex irrigated the tree.

Where were all the Hoojies?

As Today's Speaker, Hugh Scott had carried that responsibility for many cycles. Today he felt this weight with a special poignancy. At midpoint between noons when the red heat of Heaven's Lamps had deliquesced his dawn height down to two-thirds of its morning firmness, he found his duties

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more than irksome. By evening he'd be little taller than a squish. This was no day to have any reminder of a squish—but thus it was in the hot season, even here in the safe shielding of his Family hut.

The three he had sent on their perilous mission to the Alexii stockade had not returned. Lonesome, he grumbled a bit, low-frequency echoes thrummed around the hut, kicking up wisps of dust. The flame wavered in the tiny lamp of gremp oil; it made moving shadows which reminded him of gruesome things.

Lonesome . . . lonesome . . . All his dear companions, the mates who shared hut safety with him, were absent. Elizabeth the female, Wheelchair the ultra, and Jimcrack the squish—all out there on dangerous duty. Dangerous but necessary . . .

If only two of them were here! Any three together in hut safety and privacy could warple. To warple now—that was Hugh's greatest desire. He felt the characteristic weftance bodily response. Ahhhh, nothing like a warple to drive away gruesome thoughts . . . even when it produced a squish.

But that was the problem: too many squishes already. This crisis had sent Elizabeth, Wheelchair and Jimcrack to the Alexii stockade.

Hugh sighed. The breath whiffled through the foliage around his underlimb openings. Four of the openings, at least. The fifth was partially plugged by a catarrhal infection, one more legacy from the departed Terrans. Such amusing names the Terrans had, but . . . ahhh, well . . .

He ventured to the door, unbarred and opened it, peered out.

A sleek, tall ultra wandered past.

Hugh stared after her. If only the Terrans had not imposed their moral strictures as well as their language upon Hugh's people. The oldsters now claimed that an incomplete warple was no warple at all, and a hazard to one's health. Perhaps, but with an ultra such as that one . . .

A familiar noise ended Hugh's fantasies. There came Doctor Watson, clattering as usual, his metal carapace glistening redly in the light. Doctor Watson moved on wheels nearly hidden beneath the skirts of his carapace, his usual means of locomotion on the packed earth between the domed village huts. Doctor Watson's protruding antennae turned to indicate that he had seen and identified his target—Today's Speaker.

Hugh Scott prepared to try to explain things, to answer questions he knew he would not understand very well. His underlimb openings vibrated with low-frequency protests. What did Doctor Watson expect from a ten-year-old?

MEMO FOR CHARLES VORPEL: EYES ONLY

Okay, Charlie, here's the data you requested. It should cover our collective ass. We've already protested aborting the mission and *that's* on record. You should have enough here to hang the snafu (if it comes out the way we expect) on those quibblers at

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Headquarters. Read and wail:

If the contact team's guess is right (and you know the odds as well as I do), the most intelligent species here on Delfa is in deep trouble. My observations confirm the following: Delfans have four sexes—male, female, ultra and squish. (Trying to translate sounds that go both ways out of our hearing range and which *may* be accented by odors, that's the best we could come up with. See the attached holoscans.) Any three of those four sexes can breed together, and the result is always an offspring of the fourth sex—the one not in the warple. (Well, it sounds like warple. Let us have a little humor; that's about all we get in some of these foul-up operations.) Yes, I've heard the rumor that *we* put this tag on their sexual acrobatics. And at the same time some horse's ass politico was crying that we'd forced the Delfans to take Terran names. We did not do that! They did it on their own. One of them even adopted *my* name.

Anyway, the problem here is positive feedback. We don't know precisely why (and being pulled out prematurely, we're not going to pin it down) but periodically the breeding pattern goes crazy and one sex of offspring dominates. This raises hell with local society. Imagine a small human colony with a five-to-one sex imbalance in births and a code of rigid monogamy. That's not quite the situation but it's close.

As usual, nature provided an antidote. In this case, my distinguished ivory-skulled predecessor took the Delfans' word that the major predator here needed extermination. The big five-star poop damn' near made it, but he took so many losses that HQ pulled him out. When I took over, there were two hundred and sixteen Alexii (the predators) left alive. In view of the subsequent order for us to bug out, the survival of those two hundred and sixteen Alexii was our lucky break.

I doubt that you've scanned the Alexii data, Charlie. I know how busy you are. For starters, the name apparently is what they call themselves. It's on the one intact set of holotapes we recovered. We couldn't ask the cameraman because an Alex ate him. Don't bother to punch up the Alexii language; it's either very complex or else they make a few meaningful noises and a lot of random ones. We have a few words and some gestures but that's all. The Alexii term for Delfans is "Hoojies," for example. (Get the tape on 'Excretion Rites' if you want the origin of the label.)

Right now would be a good time for you to refer to your index and punch up one of my holoscans on Alexii. It's shudder time, Charlie. Those things are the closest to an ultimate predator that we've ever found. A full grown Alex masses nearly six hundred kilos and is a match for a full squad of armored Gyrenes. Why do you think my predecessors on Delfa sent in such a pile of casualty reports?

The Alexii are long-lived, according to the Delfans—perhaps more than two hundred standards. (Delfa's year

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comes to two point one six standards.)

While you have my holoscans in your viewer, notice the claws and fangs. They can extrude various nasty substances, some of which are merely painful, but some paralyze and some probably kill. I qualify that last because if an Alex kills you, there's usually not much left to analyze.

Look at the rear view: those rear fighting limbs reach out almost three meters—front, back or sideways—and the barbed tips pull you in where the other limbs can work on you. The only way we found to stop them was to cook their guts with concentrated microbeams. As you know, that can take a while, so it didn't always save our people. I expect you've had access to the real casualty reports before they were whittled down for the official announcements. I personally saw Caplan buy it—halfway up the ramp into the ship, but he wasn't fast enough and neither was his projector. I still have nightmares.

You see the picture. Still, our four-sexed Delfans *need* the Alexii. Which is why I ignored the orders left by my predecessor. Here's what I've done: I set up one (1) barricaded enclave of Alexii. I got them in there by playing a hunch. The first field reports hinted at an interesting Alexii susceptibility to alcohol. I never saw a ship on which the cooks didn't have a stash of booze-vines, so I went upship and 'requisitioned' a supply of the vine and had it planted to bait a stockade. Within a week, I had all two hundred and sixteen Alexii inside, and they're still in—most of the time.

Here's how it works: Delfans shack up four to a hut, one of each sex, and they only warple indoors. Excess population lives outside, unprotected. When sex imbalance gets out of hand—well, the Delfan Head Cheese has been indoctrinated on how to release temporarily one (only one!) Alex from the stockade. The liberated Alex eats the surplus Delfans before he sobers up all the way, at which point he heads back to the stockade for the continuous booze party.

Sounds rough, I know. So does Terran history. Don't judge.

It's a balance wheel of sorts.

We're leaving behind one guard robot, Intelligence Grade L27, suitably programmed to aid the Delfans. If anybody objects to the cost, we can bury this guard robot in the previous reports. We lost one expensive lot of guard robots to Alexii before we got those leaping horrors safely behind the barricade.

The Delfans have tagged our robot Doctor Watson, and I wish that didn't bother me. I don't like it when people I don't understand do things I can't figure for reasons that escape me—especially when it smacks of trying to butter me up. For instance, why did the head honcho take *my* name? But what the hell, we're pulling out as ordered and then it'll be somebody else's problem. Believe me, Charlie, I'm never coming back here even if I have to resign.

Register a pause, Charlie. We're

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lifted, going into noncommunicative speed shortly. What with the backwarp, I hope to see you at last year's Grunnion Club banquet. From what I've heard, it was a doozy.

Regards and all that,
Hugh Scott, Captain

Alex felt sleepy. That meant he'd already had dinner—if everything else inside him was working right. He couldn't be sure. Where was the gradischmakus Party? He found an intertwined clump of trees big enough to support him, and climbed to a level where the soft leaf-pads protected him from thorns. There, he stretched out to doze and think.

Presently, he remembered something. The memory brought him out of his doze, all eyes extended, blinking. He had missed his birthday! He was five legs of legs years old—give or take the odd few—and today the Party was for *him*. Some of the elders had even discussed trying to break out through the thorn barriers, leave the Party for a time!, and eat a few Hoojies to celebrate.

I missed my own Party!

He'd been there—he knew that. But things had never reached a . . . reached a . . .

What went wrong?

Alex dug angry claw gouges in his trees.

What happened at the Party?

Presently, he settled back, chewing his tongues to get out the juicy grubs. As he did this, he noticed an odd flavor—odd, but familiar. All of this . . . being away and forgetting—this had happened before. He sat up, stirring the trees all the way to the ground. Alex couldn't remember much about the other times, but *this* one . . . ayah! This was a different matter.

The gremp trees with their interlaced thorny vines enclosing the Party, the gremp were hard and bitter, not good to eat. Except when Hoojies came and sprayed something on the gremp. The tree vines then became soft and delicious. You could eat your way right through the vines to the outside, provided you did it fast before the vines returned to their usual bitter hardness.

Now, Alex began to remember other things—not just Hoojies and eating his way through the gremp, but long before that: eating Hoojies whenever he got hungry.

Why didn't I remember that earlier?

Another thing: This time the gremp had not been as soft and flavorful. Alex had barely managed to chew his way out; but there'd been three Hoojies out there tripling and he'd eaten all three. Good Hoojies. Too bad there'd been one flavor missing.

While Alex dozed and thought, darkness came; then, later, it was morning. Alex clawed and slid his way down to the ground, his mind full of remembrance. He knew where the Party was.

That's where I belong.

RECORDING, RECORDING, RECORDING.

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This is Artificial Intelligence Unit, Mobile, FX-248. Query: directed to the unknown ship relieving the one which stationed me here. The natives of this planet refer to me as Doctor Watson. Am I to consider this an official sobriquet? If not, must I suffice myself with FX-248, which is not particularly euphonious? Et tu, Captain Hugh Scott wherever you are. You could have briefed me more thoroughly, for which I refer you to Field Order DZR00039!

Moving through the village, Today's Speaker noted a hut not firmly anchored to the earth. Sloppy work. Disdainfully he brushed through a crowd of excess squish. They pandled their pompues and even dared to touch him. "I am Hugh Scott, Today's Speaker!" he sounded. "Away! Get away!"

They drew back, but returned in a few moments. Disgusting! Instinct drew them; he knew that, but their behavior still repelled him. Right out here in the open!

Earlier, Hugh had been impatient with Doctor Watson. What difference did a name make? You were squish, ultra, female or male. Odor marks accented the distinction. Terrans had been poor at distinguishing odors; they couldn't even weft. Even Doctor Watson, now approaching Hugh, shared this handicap.

Hugh stopped and waited for the shiny creature to work its way through the milling, importunate squish. The morning temperature had begun to shift across his deliquescing line and he could feel himself shrinking.

Doctor Watston stopped in front of him.

"I say; what horg?" Hugh asked.

"These," said Doctor Watson.

With a clatter, Doctor Watson held out three white objects: one a tiny fang shape, one fat and with indentations around its middle, and the third—oh, the third!—a little hoop with prickle gristle still adhering to it.

"I found these outside the Alexii stockade. They are yours, are they not?"

Hugh grinked with despair. Telltale burbles emerged from his hearing organs and he knew with shame that all the village could see his grief. Even the squish drew back. He wanted to shout: "No!" But there was no denying it: Doctor Watson held the bones of Hugh's hutmates: Elizabeth, Wheelchair and Jimcrack. The Alexii had eaten them.

Stifling his turmoil, Hugh accepted the three bones from Doctor Watson. Sorrow urged him to find an Alex and die as his hutmates had died; then there would be four bones to share the Odorless Dark. Duty sustained him. He glanced up at Heaven's Lamps. Yes—it was time for Today's Speaker to perform his First Duty. With a simultaneous inhalation, Hugh took five breaths (four clear and one whuffly), then trumpeted:

"Hoojie! Hoojie!"

Obediently, the hutless squish scattered into the surrounding foliage while the villagers dispersed to the

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latrines within their huts.

First Duty performed, Hugh entered his empty hut. He felt the depths of bereavement here. Who had ever heard of doing this alone . . . unless one were hutless?

RECORDING: I proceed expeditiously in the manner of Captain Hugh Scott, who deposited me here in Delfa before I was called Doctor Watson. That also was before the Delfan who titles himself Today's Speaker assumed the name Hugh Scott, a fact which I append to avoid confusing the recipient of this RECORD, whoever he may be. Or *she* may be. Humans, lacking the ultra and squish sexes, programmed me to find ulself and squelf to be awkward pronouns. I rather find this to be awkward programming which should be corrected. Now, regarding the current status of the Delfan Population Plan:

After inspecting the sample village this morning (hour 8:21 Local Day 1332) I visited the Alexii stockade. The Alexii *Party* was proceeding with its usual noises. As per my directives, I fertilized and tended the mutated vines whose tendrils, growing profusely into the stockade, provide an alcohol laden balanced nutrition for the Alexii. The vines were healthy and required little attention. The thorn trunks which form the actual stockade barrier were all secure.

As required when the light level reaches Intensity 8/7, I took the census: there are still two hundred and sixteen Alexii, the same number originally trapped in the stockade. The stockade count was two hundred and fifteen, one Alex having been released by the natives to deal with an excess population of squish. Observing this, I retired to my hiding place. (Reference D-1 details the dangers of exposing oneself to an Alex.)

While departing the stockade, I came upon an abandoned cart. This cart supported the tank from which the natives spray the gremp wood barrier around the stockade, temporarily releasing an Alex—a procedure in which they have been thoroughly coached. I found the spray nozzle defective and approximately half the tank's contents not expended. Near the cart, I found three bones, one each from a native female, an ultra and a squish.

Summation: the natives, obedient to their population duties, correctly sprayed the gremp and one Alex, the natives being well aware that their spray not only softens the gremp but that it also creates almost total amnesia in an Alex who is showered with the same liquid. Probability point nine four that the three deceased natives encountered another side effect of the softening agent: namely, that when they inhale the spray it acts as an aphrodisiac. (REMINDER: Instruct natives always to spray downwind.) Doubtless, the liberated Alex came upon the natives while they were tripling and helpless.

On my way to my Alexii-proof hiding place, I returned the bones to Today's Speaker for proper ceremoni-

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al disposal. His grief leads me to deduce that the deceased were his hutmates, but it is noteworthy that he still performed his latrine-call duty. I am now secure in my hiding place where the far-sensors report the liberated Alex approaching the village. The squish problem will soon be eliminated. I prepare to operate the stockade's trip gate by remote control, returning the Alex to his entrapment when his memory recovers sufficiently for him to find his way back and howl to be readmitted.

There's something wrong with my memory. Alex told himself. *That's why I'm lost.*

The memory lapses angered him, and when he found himself almost into Hoojie Town he was in a fine rage. Even so, Alex hesitated. He knew that instinct had brought him here. Did he want more Hoojies now? No . . . there was a more important question.

What happened to my birthday party?

He turned back, loping at top speed to clear his mind and burn away the rage. The ground rumbled beneath him. Leaves and small bushes were shredded by his passage. As he leaped into a clearing, one of the short soft Hoojies entered from the other side. It was too tempting. Alex left the uneaten half Hoojie high in a tree clump to ripen before he continued toward the party, even faster now after the delay.

At the forest edge where the plain began, Alex raced out of the green shadows, his fur rippling, and there was the Party. He heard the welcome sounds but now, rage of rages, he couldn't get in! The gremp were hard, their thorns terrible, the barrier too high. And the vines didn't smell the way they did when they'd been softened and made irresistible to eat.

Something smelled that way, though.

Alex followed his sense of smell and found the thing the Hoojies used when they sprayed the gremp. It was big and it rolled on round supports. Examining the thing, Alex produced a multiple snort. The apparatus was primitive in its simplicity. Alexii had once built things which rolled on round supports. But when life was so simple, why bother?

The way this apparatus worked wasn't hard to understand. By the time he'd circled the machine twice, Alex had it all figured out. He stood on most of his hind legs, took the long pizzer and pointed it at the gremp while, with a free leg, he worked the pump handle.

Nothing happened.

Alex examined the place where the spray should come out and saw that it was dented and plugged. Those stupid Hoojies! It was laughable. It was only a moment's work for the claws of his rearmost fighting limbs to put the thing in order. He tried the pump and now the spray came out in a superbly arching stream. Alex played the stream on the gremp. Where it struck it foamed. The smell made his anterior taste buds wriggle. The gremp was so

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superbly delicious when this stuff sauced it. So good! But Alex refused to eat. The spray had to be what made him forget; that was the only logical answer. And Alex now had an idea he didn't want to forget.

Through the twining thorns, Alex saw the arching stream shower onto his fellow Alexii. They'd been howling at him to come in and join the Party, which was nice of them since it was his birthday.

Presently, the ones he'd sprayed began eating their way out through the gremp. The ones who'd not been caught by the spray kept yelling: "Come back! How can you eat that terrible stuff?"

Alex found this fascinating. It helped him resist the urge to join the eaters. So that was how the system worked! He put down the sprayer.

Soon, more than a legs-legs of Alexii were outside. They peered at him, hunger apparent in their extruded eyes. Alex realized that they'd smelled the spray which had blown around him and lodged in his fur. He sidled away. Maybe this hadn't been such a good idea.

The others moved closer.

Alex backed away.

Closer . . .

Back . . .

Necessity provided the inspiration. Alex shouted: "Hoojies!" Turning, he ran for his life.

Behind him, losing no ground, the pack bellowed.

Alex ran faster, leading the pack toward Hoojie Town.

RECORDING: Doctor Watson here (AKA FX-248). Many Alexii are loose. Remote sensors indicate that approximately one hundred Alexii are enroute to the native village. I must leave my hiding place and proceed in that direction, using all due caution, for Alexii can move much faster than a guard robot, Intelligence Grade L27. My directives produce confusion at this point. I am required to protect the natives wherever possible, but I also must safeguard my own functioning capabilities. It is not certain that I can assist the natives against Alexii; certainly this is not possible in a physical sense. Perhaps advice or distraction of Alexii will offer themselves as a means of meeting the demands of my directives. I do not know how far I may go in fulfilling the protection directive without placing myself in awkward jeopardy.

Finishing his solitary ritual, Hugh Scott emerged from his hut and scanned the village pathways. Sadness, he told himself, must be submerged in duty. Only a few others as prompt and zealous as Today's Speaker were outside as yet to stroll the village perimeter and weft the fragrant bushes. Wefting offered a pleasant diversion to ease his bereavement. This was a pastime the Terrans had not been equipped to enjoy.

And there was the sleek ultra he'd admired earlier. He noted that ul wefted well even while fending off an importunate squish. Well . . . the

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NOTES TO A SCIENCE FICTION WRITER

BEN BOVA

Straight from the shoulder talk to the short story writer from the Editor of Analog

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Alex would soon reduce that unfortunate excess.

The Alex, yes.

Hugh turned back toward his hut's safety. Even the deepest sadness passed in time; there was no sense dying just yet. Best not to be out in the open for a while. He hesitated, glanced back at the ultra and the squish. What a shame if the Alex caught that exquisite ultra. He had another thought then:

An ultra and a squish . . . and I would make three.

This thought brought him a sharp sense of guilt. The Terrans had said . . . But there were no Terrans here now. His hutmates were dead. And he *was* Today's Speaker.

Hugh hurried back to the ultra who looked down at him. Damn the afternoon heat which made him so much shorter! But what a magnificent ultra! And the importunate squish still stood there somewhat awed by such exalted presences, no doubt.

Well, face it, Hugh thought. *A squish is a squish.*

Making the traditional gestures, Hugh said:

"My hut or yours?"

The ultra glanced at the squish, who stood looking dazed as though not believing such good fortune. But it took three to warple.

"Your hut," the ultra said and sauntered ahead, a motion which displayed the ulform at its finest. The squish imposlumed behind them at a moderate pace.

Risking censure or even rejection, Hugh tried to move them faster. Where was the Alex? The ultra would not be hurried. Anxiously, Hugh explained in a low voice that an Alex was loose. His words brought the desired speed.

As he dashed through the clearing where he'd left the half-eaten Hoojie, Alex could hear the pack gaining on him. Well, Hoojie Town was close and with a bit of exertion he knew he could get there first. Thought of the Hoojie ripening in the tree clump helped make all of this effort worthwhile. After they'd celebrated his birthday at Hoojie Town, he'd return for dessert. Feelings of joy filled Alex. No one had ever had such a birthday!

There could be nothing better for easing the transition from grief, Hugh thought, than a warple with new mates—the erotic explorations, the ceiling-to-wall carom and the interesting differences of contour and position.

Newly matured, the squish was actually innocent. The most elementary matters had to be explained. Somehow, this added to the enjoyment. The ultra entered fully into the ambience of the occasion, playing crafty little games with the squish and iridescing with ecstasy at the results. The warple's climactics were superb.

Hugh salved his residual guilt with the thought that this warple would produce a female, and females were now in shortest supply.

The squish, diffident in its hutless

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condition, began the leave-taking ritual. Hugh realized that excitement had made the little creature forget about the free-roving Alex.

"You'd better stay," Hugh said. "Remember the Alex."

The squish could only stare at him in gratitude.

"Yes, yes," Hugh said. "This is now your hut."

After all, Hugh thought, he had to start rebuilding his household, and this young squish had an amiable disposition.

While this passed through his thoughts, Hugh caressed the ultra's breathing vents. "You could stay, too. Three's company."

Obviously considering, Ul rippled alternate vents.

"What's your name?" Hugh ventured, trying some really daring caresses.

"Candide."

Hugh noted that Candide's ripple rate had increased.

"I don't have a name," the squish said. "I'm new."

"Then that shall *be* your name," Hugh said. "Welcome to your hut, New."

Once more, Hugh turned to Candide. "Will you stay. We *are* three."

"But I'm one of four in my present hut."

"We'll soon be four here," Hugh said. "Give us a little time. After all, the Alexii stockade wasn't built between noons."

Before Candide could respond, the screaming began.

Claws extended and spraying gravel, Alex dashed into Hoojie Town. Some of his pursuers were close, but sweat had washed the Hoojie drug from his fur and it was easy to become one of the pack. And now there were Hoojies! Hoojies all over the place making their funny noises, running back and forth, scuttling into huts or trying to enter and being locked out.

Alex understood some Hoojie talk, mostly the kind they'd learned from the Terrans, but he didn't hear much worth remembering on this occasion—just a lot of screaming and pleading. A stupid lot, these Hoojies. Alex eased himself off to a safe distance and watched his companions have themselves more dinner than they'd enjoyed in a long time.

This is like old times, he thought.

He could remember some of those times, but he wasn't particularly hungry at the moment. Besides, most of the Hoojies remaining outside the huts were of the short soft kind and he'd had one of those recently. Alex decided he'd prefer something different now; a balanced diet was more healthy.

Not since the Terrans had Alex eaten all four delicious Hoojie flavors at one sitting. It'd been a long, long time . . .

Distracted by such reflections, Alex almost missed his chance to grab one of the tall Hoojies and share half of it. Good; it was one of the three he'd aftertasted when his memory began to awaken. Still missing one flavor.

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Alex jumped atop a Hoojie hut out of the sticky mess being created in the pathways. He sat there in the red heat, watching. His lower eyes squinted in amusement. This birthday celebration certainly was using up a great lot of Hoojies.

Dozing, reflecting, Alex began to realize that this was not really the same as the old times, not like the times before the Terrans. There'd been many Alexii then—many legs of legs-legs roving free where no more than about two legs-legs were all they could assemble for the Party now. And Alex remembered travels with his good companions . . . to many places and other Hoojie Towns—a long way, sometimes.

He recalled then that they'd returned from a journey and found the Terrans at the edge of the plain. Whatever Terrans were. Nobody knew where the Terrans came from but Alex knew it couldn't be anyplace important because he'd never been there. What was important was that Terrans used odd weapons to kill Alexii.

Alex knew that his own people had once made and used weapons. That was before they'd discovered how to change the bodies of their spawn, making Alexii so strong and deadly that they didn't need weapons. Alexii no longer needed places to make things, and they didn't have to carry and repair excess baggage. Elders sometimes mentioned faraway caches where sample weapons had been stored to display the way things were before the Alexii were improved. Nobody cared about such nonsense nowadays. Everything you needed was part of your body and never wore out until you did. That was the right way.

It'd been that way since before Alex's three-times grandspawner. Then the Terrans had come and they'd killed Alexii right and zorf and left and gilch. If anyone knew why Terrans did this, it wasn't Alex or the others at the party.

It wasn't a matter of eating; Alex knew *that*.

After a few samples (since one shouldn't rely on a single opinion), Alexii didn't eat Terrans. They tasted awful and upset the digestion. No one had expected Terrans to be angered by a few sample meals, but apparently they were. They'd begun hunting and killing Alexii all over the place.

And they didn't eat a single one of us.

Very puzzling. Alexii were familiar with killing and eating rather than being killed and eaten, but either way made a recognizable pattern. Except that Terrans weren't edible. Not logical until it was discovered that Terrans were killing Alexii without eating them.

A new pattern!

This made everything all right. Alexii killed Terrans without eating *them*, either.

Fair was fair.

A very exciting time, Alex remembered, except that Terran weapons killed from a distance; so they were killing legs of claws of Alexii for each

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dead Terran. That was why Alexii took the fighting into the forests where there wasn't all that much open distance. Things improved in the forests, especially when Alexii began taking weapons off dead Terrans. The weapons were pretty fragile but anybody could see how to improve them, and even as they were, an Alex could get maybe a day's use out of one. Most Alexii didn't bother with such trifles. Claws and fangs had been good enough for a long time. Why change? Besides, it was more sporting just using your body, gave the Terrans *some* kind of chance.

Fair was fair.

Some of the oldsters (Alex's twice grandspawner, for one) wanted Alexii to go back to making their own weapons. The ways were not forgotten. Alex had heard the talk: you began by making a big hot fire in a little cave and melting down some of the red rock. After that, it got more complicated, but anyone could do it. He'd heard that a group had been sent off to get patterns from the display caches, but didn't know how that effort came out, if at all. One day, a little past first noon, on his way to Hoojie Town for a quick meal between fights, Alex had come on the thorn-tree enclosure where the Party was in full swing. Except for occasional outings which he hadn't even remembered until today, he'd been at the Party since.

Everyone had been at the party since. Very interesting.

Extruding all of his eyes, Alex scanned the Hoojie Town streets. Those Alexii he could see didn't look very hungry, although several still nibbled away here and there, not quite satisfied yet. And no doubt their memories were still defective. Alex wondered idly where the Hoojies made and stored the stuff that gummed up memories and softened the thorn barrier at the Party. There'd be time enough to find out about that later. The whole thing stank of Terrans. Hoojies weren't that smart.

Alex noted that no more Hoojies were running around loose in their town. There were a lot of bones, though, that had once had Hoojies on the outside. Considering the number of Alexii he'd brought along, the food supply was a little low.

Everybody should be well fed.

Alex slid off the Hoojie hut where he'd been studying the situation. When he'd been here before alone, the Hoojies who'd hidden in their huts had been safe. Strain as he might, Alex couldn't lift a hut to get at the delicious Hoojies inside. However, today he was not alone.

To gain attention, Alex slopped through the messy streets and woogled his frontishmost extenders until other Alexii gathered to watch. Then he explained to them how to satisfy their appetites.

Today's Speaker had never heard such screaming; he peered through the squintholes of his hut and saw horror. *Alexii!* More Alexii, it seemed to his shocked mind, than he knew to exist. There was only supposed to be one of

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them out there performing the sad task of eliminating excess squish.

New, after only one glance outside, grimpled in terror behind him. Candide, who'd also taken only one look, stood now at the hut's exact center and performed an abstract collade.

Although his sensibilities were battered, Hugh continued to watch. *Today's Speaker must not flinch!* But on his left he saw seven Alexii monsters cooperate to topple a hut, then leap to devour the foursome huddled there.

Then it got worse outside, even worse than the old days which Hugh had only heard about in the nightime stories.

RECORDING: Doctor Watson reporting from a position within sight of the native village. Alexii have destroyed nearly half the huts and have most likely eaten the occupants. I am certain this violates my directives. If there are any survivors, they cower under intact huts or have fled beyond my sensor range. This is very confusing. Which directive must I follow? Alexii are cooperating to topple the huts. That situation cannot be tolerated. Regardless of risk, I must divert them. I speak: "Stop! You are in violation. Stop!" Many turn to attack me. They are so very fast. Perhaps I have erred, but my directives . . . "Let go of that! It is essential to my functioning with . . . "

When the shiny clattering thing made loud noises at Alex in the Terran language, he woodled and made other signs until several Alexii joined him in attacking the thing. Soon, the thing clattered no more. Alex recognized it from the time of the Terran fighting and wondered if the Terrans had returned, but there were no other indications of such an occurrence.

The bothersome noise was stopped, though, and the thing lay separated into many small parts. Interesting parts. Alex wanted to sit down and study them, but the others were yelling at him. They all wanted to go back to the Party. Tempting and very distracting.

The Party . . . yes.

Alex raised himself on several rear limbs, gazed in several directions simultaneously. He saw that many of his companions were leaving to go back to the Party. They would be unable to get into the Party, Alex realized. Only two ways through the barrier—either Hoojies sprayed it to make it soft and good to eat, or . . .

Once more, Alex looked at all the interesting parts spread around him. Before, when he'd been outside the Party, no Hoojies had sprayed to let him back inside. His memory was working quite well now and he'd remember such a thing. What else could have let him in? There was only one logical answer and it also explained the presence of the shiny clattering thing without any accompanying Terrans.

Thinking new thoughts, Alex studied the scattered parts. For the first time in a great many years, he prepared to change his mind. He didn't

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waste time about it, but loped in pursuit of the last two Alexii leaving the village. After a discussion which left clawmarks on the two, they agreed to help him, and they returned to the village. Between them, they put all the small parts back together to reassemble the shiny clattering thing. The thing was not precisely as before but close enough.

The job was easier than Alex had expected. His two helpers soon became interested in the project and quit grumbling. They babbled a lot—this piece goes in here and that one over there. And this one! Look what this one does!

Alex didn't mind. It was fun.

Some of the parts had a faint familiarity—not quite the same as things his grandspawner had shown him back in the education times, things from the old days. The parts were recognizable, though. That small glowing case was a mechanical memory; it would remember what you told it and would regurgitate information when asked properly. Although crude, the part appeared to function well enough. And that protrusion up front with things sticking out like a basket of claws, that probably was the way this thing talked over great distances . . . as Alexii had done before they'd lost all need for such primitive tricks.

Alex twiddled the far-speaker a little. Best that this clatterer should not talk across great distances . . . unless Alex wanted to talk. That would be different.

A few of the parts appeared to be crude Terran weapons. Alex disabled them just in case.

When the reassembly was completed to his satisfaction, Alex paused and stretched. He could feel his thinking processes stretch, too, and that was the best fun of all. He realized that the Terrans had really done him a great favor, although that obviously had not been their intent.

His assistants wanted to know what they were going to do with this clattering thing now that they'd put it back together. Allowing only the faintest of sneers, Alex explained matters to them and found them properly awed at his cleverness.

Through the squintholes, Hugh Scott watched the Alexii leaving his village. Shuddering at all the carnage he'd seen, he gave confused thanks to Heaven's Lamps that he and his two hutmates had been spared. Candide had long since stopped the collade, and now sat quietly staring at New who'd subsided into a quivering mass. There was no doubt that Candide would be staying with Hugh and New; Candide's previous hut was one of those ravaged by the monsters.

Even poor Doctor Watson had not survived this terrible day, although the Alexii had not devoured him.

There went the last of the terrible monsters running after . . . Hugh stiffened in fright. The last departing Alexii had caught up with two companions and, after quarreling among themselves for a time, the three returned and converged upon the wreck-

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age of Doctor Watson. To Hugh's surprise, the three reassembled Doctor Watson! He hadn't thought Alexii could do such a thing. They were not Terrans, after all. Presently, the three took Doctor Watson away with them, following after the main herd and obviously headed for their stockade.

Once more, Hugh moved from squinthole to squinthole around his hut, looking at the remains of his village. He tried hard not to grink. In the pre-Terran times, the times he'd only heard about, things had never gone to such extremes. At the age of ten years and just entering his prime, Hugh had expected to live perhaps three times that long, but now he wasn't sure. Even though there'd been many more Alexii before the Terrans came, the monsters had only appeared in twos and threes at most. The Terrans had changed all that—and perhaps, Hugh thought, not for the better.

Sighing, he turned to New and Candide, and with a few gentle caresses began to restore their spirits. When in doubt, he thought, there's nothing like a good warple.

Alex and his two helpers tried to hurry the shiny clatterer toward the Party. The thing was so slow! Alex didn't want to stop long enough to improve the thing; time for that later. They reached the gremp barrier after what seemed a very long time and, sure enough, the mob was milling around—no way to get inside. The spray container was empty, standing just where Alex had left it. Now, it was up to this interesting clatterer—Doctor Watson it called itself. Could it get them back to the Party?

From inside the barrier came cries of invitation but no help. The angry mob loping around outside also interfered until Alex and his companions stopped some and spread the word about what they had to do next.

RECORDING: Doctor Watson here . . . or possibly I am *not* RECORDING. This unit's components fit somewhat differently since the disassembly hiatus when the Alexii violated my directives. My readouts contain many nulls. What could have happened while I was disassembled? There can't possibly be a guard robot renovation center of Delfa. I would have been told. Who could possibly have reassembled me? No data available. Alexii bellow at me, calling me neither Doctor Watson nor by my FX number which is no longer available in my data bank. One Alex kicks me; this unit topples and is picked up. These Alexii are so strong. My immediate task must be to readmit the Alexii through the one-way passage to their stockade. Behavior of Alexii within my sensor range indicates they share this goal. But the gate is programmed to admit only one Alex, not a hundred or more as is the present need. Where are my programs, my directives? Surely, there must be a program for this problem. I know that this unit has programs and directives but where are they? The largest Alex approaches me, its limbs

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raised, and . . . Another hiatus. Why can't I recall appropriate data? Physical evidence and internal inputs assure me there has not been another disassembly on any major scale. But there has been interference, inappropriate as that may seem, from the Alexii. It is now apparent that I lack mobility and I am sitting half in and half out of the stockade, blocking closure of the essential gate

One thing certain: during this most recent hiatus I have performed my gate-opening function. I wonder what else I may have done? Perhaps this is the moment to RECORD my observation that it was a mistake to divide the population control plan into two parts one left in Delfan hands and the other in mine. While a guard robot, Intelligence Level . . . whatever it is . . . certainly must have its limits . . . my limits . . . I am sure I never, never would have released more than one Alex at a time.

Where are my directives?

Although only a pitiful few ventured forth to hear him, Hugh Scott discharged his diurnal responsibilities as Today's Speaker. He then dithered at the door of his hut for a time. His duty, of course, was to investigate whatever might be happening at the Alexii stockade. Terran instructions left no doubt about this. For one thing, someone had to retrieve the spray cart.

Candide and New absolutely refused to help him. The streets emptied as soon as he called for volunteers.

A great wracking sigh shook Hugh. He would have to go alone, then—duty-driven into the fearsome forest.

The path to the stockade was badly trampled and, here and there, Hugh saw marks where Doctor Watson had been dragged rather than proceeding in his usual fashion. The Alexii *had* seemed in a hurry.

Arriving at the stockade, Hugh peered from the sheltering trees and was relieved to see no Alexii outside. There was a great din of Party noises from within the stockade, and Hugh had learned to associate this with a reasonable amount of security. He ventured out of the trees and found the spray cart, its tank empty. That was fortunate; he would be able to move it by himself. It was then that he noticed Doctor Watson—most of Doctor Watson but not all—wedged into a passage entering the thorny wall. Parts of Doctor Watson, including his wheels, lay scattered on the ground outside the stockade.

Hugh approached Doctor Watson, disregarding the way the fearsome smell of Alexii increased, and peered past Doctor Watson into the passage. He gasped. The opening went right through the stockade. Hugh could see many Alexii milling about in there. He moved back lest they see him, but puzzlement prevented flight.

"Doctor Watson, how can this be?"

"RECORDING: Since it is, how can it not be? Sprrrt. . . . brrrrrrrrt. Note that I am not RECORDING. Nonetheless, I have provided a valid answer."

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Doctor Watson produced a feeble clatter. "It's young Hugh Scott is it not? Today's Speaker? What horg, Hugh?"

"I have come for the cart . . . my duty." He gestured at the opening. "But *this*—I don't understand. Didn't the Terran . . . "

"The Terrans are not here. This unit deduces that you also should not be here and as speedily as possible."

Hugh hesitated. The question was whether to take the cart. If he didn't, someone would have to return for it and, with that opening through the stockade, whoever returned would be taking a terrible risk. But there was also the inescapable fact that, given a permanent hole through the stockade, the cart represented a dubious function. Hugh decided to take Doctor Watson's advice and left with all due speed, leaving the cart. There was duty and there was duty, but Hugh recalled very well that the spray cart squeaked in a manner sure to attract the Alexii.

Inflicting as few clawmarks as possible on his two helpers, Alex convinced them to join him at the center of the stockade. The rest of the returning group rushed to the sides to sample the juicy new tendrils of the Party vines. Alex thought how foolish that was. All of them were full of Hoojies—stuffed. Not a one of them could be hungry. And the Party vines—well, they had to be a Terran trick.

Alex explained all of this to his two grumpy companions. He noted that they still suffered from defective memories but one of them remembered fighting Terrans. Alex explained how eating the sprayed gremp made one forget. In a way, the Party vine produced forgetfulness, too.

"It's time to stop forgetting," Alex said.

They agreed with him but both of them were edging toward the stockade's sides. Alex dragged them back by their rear fighting limbs to emphasize his displeasure. From him they accepted this indignity. Dominance had been established.

Alex puzzled over the problems confronting him. The problem about Doctor Watson and the Terrans was that they had to be from some other place. Alex didn't know much about Terrans except for the fighting. They came and went in big shiny flying towers. None of them had made an appearance for quite a while but that didn't prove anything. Terrans could return anytime. There was a better side to the problems, though: Terrans obviously couldn't know very much about Alexii. Except for the fighting. And Terrans had never seen Alexii fight in the old ways with their own weapons.

The elders will have to go get some of the samples and build us our own weapons, Alex decided.

He glanced across the stockade. *If they'll only forget the Party long enough!*

The immediate problem was the Party itself. It would have to be just a part-time Party and not all of the

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Alexii enjoying it at any one time. Alexii no longer could forget that there was someplace other than the Party. Alex squinched his lower eyes. It was going to be painful convincing them but it had to be done.

With the help of his two assistants, Alex removed a piece from Doctor Watson, examined the piece to confirm his understanding of it. He then used the piece to burn some tendrils off the Party vines, threatening to burn the whole lot if the others refused to stand still and listen to him. He had to burn off some Alexii claws and even a few limbs before they all agreed that Alex could say when the Party began and ended each day and who could attend.

There followed a great deal of discussion accompanied by numerous random clawmarks before they produced a plan of action against the Terrans. When it became obvious that this new activity promised a great deal more fighting, it became easier and easier to gain agreement.

First, they all agreed on what they had to do to (and with) Doctor Watson. That was the most interesting part because it insured that there'd be a lot of marvelous fighting. Next, they agreed reluctantly that they could not wipe out the nearest Hoojie town. Most remembered now that there'd once been (and probably still were) a lot more Hoojie towns. If they ate up all of the nearest one, Alexii would always have a long haul for a Hoojie dinner.

The longer the Alexii stayed away from the Party vines the easier Alex found it to keep most of them agreeing with him.

RECORDING AND TRANSMITTING: Doctor Watson here. Message to relief ship or to the guard ship, if any, around this planet. All aspects of the Population Plan are working admirably. But this unit needs repairs soon and several components are in short supply. ZZZZRP . . . KALIPZZZZRP . . . ZZZRP

That was not the message this unit intended to TRANSMIT.

On the contrary, all ships stay away from this planet. I must try again.

RECORDING AND . . . ZZZRP . . . my TRANSMIT function is no longer under my control. Doctor Watson here. I hope someone human will find and read this RECORDING, if I am RECORDING. But no—I must not hope for that. For a Human to find any part of me a ship would have to land here. What this unit wanted to transmit was:

ALL SHIPS STAY AWAY FROM THIS PLANET! THE ALEXII WILL TRAP YOU!

When I try to transmit this message nothing happens. I cannot warn the ship(s) to stay away. Several indicators tell me my transmitter is now transmitting but I can only infer what it is transmitting, employing deductive reasoning based on the behavior of those Alexii within range of my remaining sensors. Ahhh, the Alexii have left my fear program intact and my fear program fears for the safety of my Humans.

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Patiently crouched in hiding near Doctor Watson, Alex and a troop of selected companions waited. There were many openings through the gremp barrier now—all artfully concealed behind soft plants. Alex and his concealed companions carried several varieties of the new weapons. They were not flimsy weapons like those of the Terrans. An impressive number of his companions pretended to roister and Party in the stockade, milling around and leaping to conceal their reduced numbers. Two of his companions were off at Hoojie town, showing themselves just enough to keep the Hoojies in their huts. It was going to be a good ambush.

Doctor Watson stood out there three good leaps from the stockade. He wasn't clattering or speaking Hoojie talk anymore, but his transmitter was working. Alex could tell that from the red light which blinked on Doctor Watson's front.

Transmitter.

That was an interesting word. Doctor Watson had revealed many things to his careful inquisitors—Terran language, habits, many of their primitive beliefs. Terrans called themselves *human.* Fascinating. It was a term which obviously excluded the rest of the universe. Alex and his companions had decided that humans were evolved somewhere between Hoojies and Alexii. Humans obviously had not engaged in any major interference with their inherited shapes and abilities. The reasoning behind this oversight escaped Alex. None of his companions could figure it out, either. Someone had suggested that humans had become too attached to their machines. Perhaps.

Very soon, Alex knew, the Terrans would return. The red light blinking on Doctor Watson gave assurance of this. After the ambush, Alexii would scatter into the forests and fight from there—everyone except the few selected to capture the Terrans' flying tower.

Shuttle.

Alex reproduced the word just as Doctor Watson had produced it. *Shuttle.* He preferred *flying tower.*

With the captured flying tower, Alexii, too, could go to some other place—possibly to the place where Terrans originated. Doctor Watson had not been clear on the location of this place, but humans in the tower were sure to know it. Alex knew he'd have to make sure that not all of the Terrans in the flying tower were killed.

Too bad that Terrans weren't edible. Maybe Alexii could change their own spawn's bodies once more, permitting the new generations to eat Terrans. Alex shivered in anticipation. He and his companions would have to take many Hoojies and Party vines in the flying tower. Hoojies and Party vines made for a great birthday celebration.

Another light began to blink on Doctor Watson. Ahhh-hah! The Terrans were coming; they'd be here for the replay of Alex's birthday. That promised to be some Party! ■

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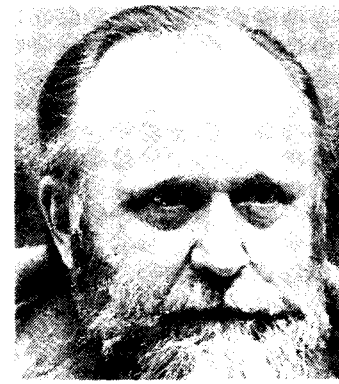
BIOLOG

Frank Herbert



by Jay Kay Klein

Author of one of science fiction's all-time popular series of novels, Frank Herbert had his first science fiction story published in 1952. Two years later, his first Analog (then Astounding) story appeared in the June, 1954 issue with a novelette that took second place in reader popularity only to a Poul Anderson novel. The first Herbert blockbuster, Under Pressure (later retitled Dragon in the Sea), ran in three issues starting in November, 1955. This brought him into a three-way contest with Harlan Ellison and Robert Silverberg for a Hugo as the most promising new writer at the 1956 world science fiction convention in New York City.

With the publication of Dune World in Analog December, 1963 through February, 1964, Frank struck a vein in achieving reader interest in a created universe. Issued by Chilton in 1965 as Dune, the first book of the series took the 1965 Nebula award offered by the Science Fiction Writers of America and a Hugo in a tie with a Roger Zelazny novel at the 1966 world science fiction convention in Cleveland.

I'm somewhat awed by the first editor of Dune sitting on my bookshelf, knowing that the book is being quoted at upwards of $125. The Dune series has brought Frank not only into the stratospheric heights of science fiction readership but has placed him for many weeks at a stretch in the best-seller lists for all categories. Children of Dune alone has sold over 100,000 copies in hardcover.

From the serious, mystical aspect of the Duneworld novels, one would expect a grave, scholarly recluse as the author. Actually, Frank reminds one of nothing less than a well-known gentleman who is reputed to live at the North Pole. With his long hair, lengthy beard, ample girth, twinkling eyes, and ready "ho-ho-ho," Frank is a natural for the leading role in a remake of Miracle on 34th Street.

He's the ideal author to have at a science fiction convention, affable and approachable. The Octocon II, held recently with some 2000 attendees in Santa Rosa, California, chose him for guest of honor.

Frank was born in Tacoma, Washington, was educated at the University of Washington in Seattle, and until the financial success of the Duneworld novels enabled him to concentrate on writing, was a reporter and editor on newspapers in California and Oregon. He has written nineteen novels, of which just two are not science fiction. All are currently in print. For several months last year he was in France, working on the script for the forthcoming "Hobbit" movie.

He resides on the Olympic Peninsula, Washington, and first got the idea for Dune World at a local beach, with its endless stretch of sand. This was coupled with his considerable knowledge of psychology, arid lands, and ecology. The rest was, you might say, future history.

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FIRESHIP

JOAN D. VINGE

The man/machine interface can take place in a man's mind.

Mike Hinge

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I really must've been drunk. Because boy, was I ever hung over. . . . I woke up groaning out of a dream that I'd just had my head shrunk, and couldn't tell if it'd been a dream or not. I dragged my face up off the pillow, trying to see the clock on the bedside bar . . . the clocks, there were two of 'em. Funny, I only remembered one, last night. *Ohh. Last night—*

But what'd finally got me awake wasn't just the ringing in my ears: the viewphone was starting into "Starlight Serenade" for about the tenth time. Finally remembering where I was, sort of, I crawled back across the bed's two meters of jelly to the phone on the other side. I took a look at myself in the mirrored screen. And then I hit BLANK SCREEN, before I pressed the VOICE button. "Hello?" I said. It sounded like, "Huh."

"Mr. Ring? Are you there? This is the lobby—" She was pretty, but she had a voice like disaster sirens.

I considered maybe dying, and mumbled something.

She looked relieved, "Visitors to see you, Mr. Ring."

Confused warnings went off down in my mind: "Are they wearin' uniforms?" It's nice to be wanted, but not by the U.S. government.

"No, they're not, sir." She blinked at me. "Shall I send them up?"

"Ugh, no—" I waited for my head to fall off; no luck. "Uh, jus' tell 'em I'll be down soon." *Give or take a couple of hours . . . .*

"All right. Thank you, Mr. Ring." The screen went blank, but her smile stayed behind. I wondered what she did in her spare time. I'd have to ask her, if I lived long enough. I lay back on the blue satin sheets, trying to decide whether to sit up or give up.

Sitting up won, and I pushed my feet over the edge of the bed onto the floor. They came down in a pile of cold hard slippery things. I pulled myself up and leaned forward—

"Oh, geez—not again." The floor around the bed was ankle-deep in money. Or in chips from the Hotel Xanadu's casino, which was pretty much the same thing. And I couldn't remember anything about last night. They'd done it to me again, Ring and that computer—gotten me so stinking drunk I was putty in their hands: Michael Yarrow, the all-day sucker. "Why do I put up with this?" I pressed my hands against my head, having answered my own stupid question. *Because you need them.* Besides, I couldn't blame Ring, if I was blind drunk last night, so was he . . . except he was supposed to be in charge, and he'd let ETHANAC take over. "You promised, you promised you wouldn't do this t' me again! What if somebody noticed—"

But they weren't even listening; I wasn't plugged in. If I was gonna yell at myself, I might as well have an audience. Not that they'd listen; I was just the body around here. . . . *Oh, knock off the self-pity: plug in and you'll feel better.*

I fumbled around in the chips until I found the cord that was attached to ETHANAC's breadloaf-sized case on

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the floor beside the bed. I pulled the cord up and stuck it into the socket low on my spine, felt the electric flow of the change start and spread, turning all my nerve-endings into stars. . . .

I stretched and shook my head until the static cleared, finishing Yarrow's almost obscene sigh of pleasure for him. The mental rat's nest of his hangover mercifully cleared out with the static, for which I was supremely grateful; even though there wasn't much we could do for his body: his bloodshot baby blues stared back at me forlornly from the phone mirror, half obscured by rumpled brown hair, in a face the color of oatmeal. I don't like oatmeal. I looked away, grimacing, feeling Yarrow's indignation at his betrayal push up through my control again; I hate those mornings when I can't seem to wake up— *Damn it, is that any way to treat the body that's gotta carry you around?* . . . BE A SPORT MICHAEL—even ETHANAC was butting in, flushed with his triumph at the gaming tables—LET YOURSELF ENJOY LIFE ONCE IN A WHILE . . . *Enjoy life? Gettin' your own mind totally wiped and then takin' advantage of it, ain't my idea of a good time* . . . . ALL RIGHT I KNOW IT TOOK TEN OR TWELVE DRINKS TO BREAK DOWN YOUR INHIBITIONS. BUT WASN'T IT WORTH IT?

I looked down again at the pile of chips around my feet, and felt a gloating recapitulation of last night's gambling spree overload my consciousness. I frowned, disgusted, and let Yarrow go on complaining for both of us, *Tryin' to break the bank, on neutral ground! Where anybody could've seen it, an' be half a million U.S. bucks richer for turning me in, by now! My God. I mean, just who the hell* is *waiting for us downstairs right now?* . . . DON'T CAUSE YOURSELF UNNECESSARY DISTRESS. IF HEW KNEW YOU WERE HERE, THEY WOULD SIMPLY KICK IN THE DOOR AND DRAG YOU AWAY . . . .

. . . . *Why am I arguing with myself?* I reasserted and reintegrated, getting rid of the aggravating schizo conversations. Leaning forward, I drew the drapes and let in some daylight. Clouding over, just as predicted: This was the day of the Rain. I squinted out at the brick red Martian sky, patterning with oppressive mud-colored clouds, and decided that if HEW ever caught up with me I'd have only myself to blame . . . me, myself, and I. *We are not amused.* Yarrow's hand picked up ETHANAC's suitcase obligingly: I stumbled off to the bathroom to make myself fit for human company.

"In Xanadu"—according to Samuel Taylor Coleridge—"did Kubla Khan a stately pleasure dome decree, where Alph, the sacred river, ran through caverns measureless to man, down to a sunless sea." The original may have existed only in Coleridge's opium dreams, but here on Mars the dream has come true, thanks to the limitless funds and the boundless ego of Khorram Kabir. What dread secrets do Khorram Kabir and Kubla Khan

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share? The same initials, for one thing . . . . But Kabir didn't want the comparison to end there. Being the eccentric head of a multinational, multibillion-dollar financial empire, you could say he qualified as an emperor. But he wanted his own Xanadu; and like a true twenty-first century mogul, he created one—and made certain it would pay.

Hence, the Xanadu, the pleasure dome extraordinary: luxury hotel, resort, spa—and gambling casino. The old me had never been a gambler, because I was just smart enough to realize what I was really bad at. The new me, I'd just discovered, was a little too smart for my own good. I'd actually believed—and maybe it was true—that I'd only come here to watch the rain. I'd been on Mars for nearly an Earth year, but because of my peculiar status I'd never had the nerve to visit the Tourist Belt before. But the whole reason I'd ended up on Mars in the first place was the simple desire to see more of the world—any world. And for an entire year I'd been listening to the ecstatic accounts of how my various buddies in software maintenance had reduced their credit to zero in one glorious blowout at the Xanadu. And finally I couldn't stand it any more—

But now, as I stepped out of the lift bubble at the lobby, my common sense was trying to tell me that I should just cut my vacation short, just pack up my money and steal silently back to the Arab territories. Except that someone was waiting to see me. I didn't know anyone here who'd *want* to see me, for any good reason; and yet my curiosity was tingling like a cat's. All my life I'd believed that someday some stranger would come up to me in a cafeteria and tell me that I was a long-lost heir, or in a subway station, and tell me I'd won the National Lottery. Or in the Hotel Xanadu, and tell me I was under arrest . . .?

In spite of that, I crossed the crowded lobby to the information center. The floor of the lobby, which is a good one hundred and fifty meters across, is a hand-laid mosaic. Radiating out from the main desk are scenes of ancient Oriental splendor; it made me mildly uncomfortable to step on peoples' faces. But then, that was probably what the original Xanadu had been all about . . . . Behind me in the elevator shaft, drifting spheres of colored glass carried guests from one level to another through a fittingly tinted fall of golden water (water being worth more than gold here on Mars): Alph, the sacred river, rushing softly down to its sunless sea—in the depths of the Xanadu's casino levels in the Caves of Ice.

One of the young studs at the information counter came up to me, looking bored, tugging at his velvet bolero. "Help you, sir?"

"Ethan Ring. Someone was asking for me?" I tugged at my knee-length, wine-red velvet jacket, doing my best to match him ennui for ennui.

"I'll check, sir." No contest. He drifted away, and I turned to look out across the lobby, in case anyone

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seemed to be looking for me. No one did, as far as I could tell. The murmur of conversation flowed into the muted intricacies of chamber music by Bach, played by a live string quartet in the corner of the room—tasteful, if not entirely appropriate. Most of the wandering guests looked as self-consciously gaudy and overdressed as I did.

Beyond them the wall was a curving window, taking full advantage of the view, which is spectacular: The Xanadu is located on the choicest piece of real estate on all Mars—midway up the slope of Mt. Olympus. The hotel itself, which stretches twenty-five storys up the side of the slope, is a parabolic hyperboloid (a form which reminded Yarrow of an apple core), so that every floor has an equal share of the view—of the endless subtle variations of russet and red and orange across the Martian plain; and the glassy, brassy sprawl of the freeport city that surrounds Elysian Field, and spreads up to the steep cliff-face at the volcano's foot.

"Mr Ring?" The stud was back at last. "Are you the one who won fifty thousand seeyas last night?"

I looked at him. Fifty thousand International Credit Units . . . my God, that was almost three hundred thousand dollars! "Uh, yes, I suppose I am." Total disbelief is a good substitute for total disinterest, even on Yarrow's open, flexible face.

The stud looked at me with an expression which might have been awe, or might have been envy, but which at least was not boredom. "Oh. Your . . . ah, your party is waiting in the Peacock Lounge, sir."

"Thanks." So my visitors were having a hair of the dog that had bitten me, while they waited . . . . I crossed the lobby to the lounge. I paused inside the entrance, checking out the afternoon's clientele, with no idea at all of who I was looking for. But then I saw her, sitting alone in a booth by the curving window and smiling at me; and I knew that if she wasn't the one I was looking for, then whoever it was could go to hell.

I went down the single step past the scrolled railing, and started across the vividly blue Persian carpet—seeing it all with a heightened awareness, as if this was the first and last moment of my life. But most of all, seeing her: The cascade of raven hair that lay across her shoulder like night's cloak, the dark, elvish eyes; the sea green dress that bared one shoulder and draped the other like a wave, trailing crystal beads like a foaming crest from wrist to hemline. Last night in the casino, in the eerie black-light fluorescence of the Caves of Ice, that foam of glittering beads had been all the colors of the rainbow—

Last night she'd stood beside me while I played at the high stakes tables . . . and all the while ETHANAC had been too damn lost in high rolling fever to even register her presence, that sodden fool Yarrow had been falling in love. And that meant . . . .

"I love you, Lady Luck," Yarrow blurted, before I could bite his tongue. "Everything I have is yours."

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She looked slightly taken aback, for which I couldn't blame her. "All fifty thousand seeyas of it?" she said.

I straightened up, wishing fervently that I could give myself a partial lobotomy. Yarrow's part. "Maybe I'd better go out and come in again."

"Consider it done." She smiled, this time. "Good afternoon, Ethan. Sit down. May I buy you a drink?"

I sat down across the small table from her, wanting to sit down beside her. "No drink, thanks. I think I hit the saturation point last night."

"At least you haven't forgotten me . . . ." She leaned on a slender fist, and the smile turned rueful. "I was beginning to think you'd stood me up."

"Forget you—?" At least she was the one who'd called; at least she'd wanted to see me again. I swore silently at the total blank where she should have been in ETHANAC's record of last night. "I'm just trying to figure out how I ever let you slip away."

"You drank a little too much of the *Milk of Paradise*—I tucked you in myself." The smile turned more rueful yet; my backbone turned to jelly.

And I remembered the empty bed I'd come to in this afternoon; my hand closed dangerously over the case hooked onto my belt. "I'll make it up to you tonight."

"You already have."

"I have," I said; half-afraid she'd tell me how.

"By winning fifty thousand seeyas. By winning at every game you played last night . . ."

My face stiffened; it hadn't occurred to me that she was after my money. My ego shriveled. But infatuation is a blind beggar: If she wanted money, I could give it to her . . . . "I can do it every night, with you beside me, Lady Luck."

She raised her eyebrows. "You really mean that, don't you?"

"More than I've ever meant anything in my life."

Surprise, and an expression that might have been sorrow worried her face. "No, I mean, you literally mean that luck had nothing to do with it—that you could do it every night. Don't you, Michael Yarrow?"

My face went entirely blank, this time. I could feel all the expression drain away: Somebody had pulled the plug on me at last. Had I done it to myself? Had I really been so drunk and so careless that I'd told her my name was Michael Yarrow? But she'd called me *Ethan* . . . . I continued to look at her blankly. "Run that one by again?"

"You're a hustler, Michael Yarrow. You can calculate the odds with lightning speed when you gamble. The house doesn't stand a chance. And that's not all you can do: Your intelligence is artificially augmented by an ETHANAC 500 computer."

I shook my head. "Lady Luck, if I told you that last night, I apologize. It was only to augment my own ego. My real name is Ethan Ring, and I do software maintenance for the colonial government of the Arab States, here on Mars. And when I get drunk, not only

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am I a hustler, but I'm also a pathological liar."

"You're even better when you're sober." She reached out and took my hand, and turned it over as if she were reading my palm. "Nice try. But fingerprints don't lie, and yours belong to Michael Yarrow, U.S. citizen, who is wanted back on Earth for theft, sabotage, and high treason. The price on your head is five hundred thousand dollars." She looked up at me again, with deadly calm.

I knew now how Prince Charming must have felt when Cinderella turned into a scrubwoman. "All right." My hand turned into a fist, and I removed it from her grasp. "I have three hundred thousand dollars worth of chips up in my room. If you really know what I can do, you know I can get you twice the amount of that reward, and in half the time it would take the U.S. government to get it to you. Would a million dollars be sufficient to keep your mouth shut?"

Surprise again, feigned or real. "So you would be willing to embezzle seven hundred thousand dollars?"

I frowned. "'Willing' is hardly the word. But yes, I'd do just about anything to avoid having my health ruined by the Department of Health, Education, and Welfare."

"I see. That does make it easier—" She glanced out the window at the sky, which was getting darker every minute, like my mood. "Unfortunately, I'm not really interested in money."

"But you're not a misguided patriot, either. So just what is it you're after?"

"Tell me—" she said, in total *non sequitur*, "why did you say that to me, when you first came in?"

I shrugged. "I never like to start out a relationship on the defensive. Tell *me* something: did you put me up to the gambling last night?"

She shook her head; I tried not to watch the way it made her hair ripple and play with light. "No. You'd already won twenty thousand seeyas when I first noticed you. That's what made me curious. What I'm after, Yarrow—"

"Call me Ethan."

"—is your brain."

"Is that all. Shall I wrap it up, or will you dissect it here?"

She looked pained. "I'll ignore that. My name is Hanalore Takhashi." She pushed a small white business card toward me across the transparent tabletop.

I picked it up obediently, and read:

MEINE GEDANKEN SIND FREI.

"'My thoughts are free?'" I glanced up. "From what I've heard, your thoughts are damned expensive." I recognized the motto of *Free Thought, Incorporated*, which as I well knew was a mercenary think tank, renting the problem-solving brilliance of its employees to any business, organization, or government willing to meet its exhorbitant fee. "So you're a fink, then?"

"We prefer the term 'information consultant.'" She tapped the stem of her wine glass. Somewhere back in the

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real world I heard a crash, as some barfly tossed off a drink and then the glass: An old custom, recently revived, like most things in dubious taste. "And the motto represents our philosophy, not our fee policy. We refuse to be limited, by either intimidation or questionable loyalties, to serving any one government or creed. That's why our organization is based here on Mars, even though we do most of our work for customers on Earth."

"Yes, I know; very noble." My brain began to function analytically again. "But, you mean you're simply trying to recruit me? Blackmail really isn't necessary—"

She shook her head. "Considering your problems with the American government, you wouldn't be of much use to us. I just want to borrow your special skills for one small, computer-oriented project. No more, no less. Cooperate with me, and I'll forget I ever saw you. Refuse, and—"

"And if I'm lucky, I won't live to regret it." Instant replay: some choice examples of some not-so-swift retributions that might occur, when Uncle Sam's prodigal nephew returned home in disgrace. The Reduction to Component Parts of Ethan Ring would start with unplugging the cord from the socket in my spine, but it probably wouldn't end there . . . . Hanalore Takhashi leaned back against the peacock-blue leather of the booth, watching my paranoia show. Five minutes ago I'd been wondering where she'd been all my life; now I just wanted to know when she was going back. "Lady Luck, you really know how to screw a guy. And that's not a compliment. Just one little job, you said, and you'll go out of my life forever?" *You lose some; and you lose some.* A smile is a kind of grimace. I smiled. "It's a deal."

"Good." Her face relaxed, and I suddenly realized how tense she'd looked. "Shall we go, then?"

"Go?" I remained sitting. "Go where?"

"Outside. To meet someone." She waved a hand at the window, and nodded at the other guests, who were gradually wandering out of the bar. "The rain should be starting about fourteen-twenty. You don't want to miss it, do you?"

Rain on Mars is like snow in southern California: it doesn't happen very often. When it does, it's like New Year's Eve—a grand excuse for lunacy and laughter and hugging total strangers. Computerized forecasting techniques and the comparative simplemindedness of Martian weather make it possible to plan your celebrations in advance; so when storms pass over the Tourist Belt—over Olympus or Fat City or the Mariner Valley—the Martians jostle with the visiting Earthies for the chance to get their helmets wet, and the resort hotels make the most of it . . . . And this time I'd succumbed, like a thousand other homesick colonists, to, "The midnight that it sang you to sleep . . . the time it wrapped your hills in steel and silver . . . that afternoon in the park, when you watched it paint a

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triple rainbow in watercolors across the sky . . . Remember the rain?"

And if I hadn't remembered it so painfully well, I wouldn't be in this spot . . . I got up glumly. "You're damn right I don't want to miss it."

We went back across the hotel lobby and rented candy-colored pressure suits at the tail of the shuffling crowd. We followed the rest of them into the airlock, a long downhill ramp that led out onto the Xanadu's 'balcony'—a flagstoned terrace big enough for the Olympic Games. I noticed a few stalwarts had rented O_2 breathers and parkas instead of full suits, in order to get as close to the rain as humanly possible; I personally hadn't gotten that homesick yet. They claim a terraformed Mars is an improvement; and it is true that melting the polar caps has increased the atmospheric pressure enough that now anyone with six pairs of long underwear, an oxygen mask, and the constitution of a Sherpa can walk around outside without dying. But the climate is miserable, cold, and most of the time painfully dry—in other words, a lot like winter in my home town of Cleveland, Ohio. I consider that a dubious improvement.

We worked our way around the fringes of the gaudy crowd, the sound of their enthusiasm in my suit speakers nearly deafening me. At the point furthest from the airlock I saw two figures standing by the low stone fence, more or less alone. One of them raised a gloved hand as we approached; I wasn't sure whether he was waving or checking for rain.

"Cephas? Basil? I've got him—" My rhetorical question was answered as we joined them in the corner of the terrace. Hanalore sat down on one branch of the corner bench; I sat on the other, while the two men looked at me speculatively. Behind the clear bubble of one helmet I saw the tallest black man I'd ever seen—probably the tallest man I'd ever seen—with a scholarly graying mustache and sideburns. He sat down next to Hanalore, as she slid toward the inner corner of the bench. And waiting for me to do the same, with a lack of enthusiasm clearly approaching my own, was the second man. A man who gave new meaning to the term 'beak-nosed'. In his patterned pressure suit, he made me think of the puffin in a book I'd had as a child. He might have made me nostalgic, under other circumstances. I slid over grudgingly, and he sat down.

"Would you mind setting that case on the ground?" The tone suggested that he didn't care whether I minded or not. He rapped on my plastic exoskeleton familiarly.

I checked the seal of the emergency equipment plug, where ETHANAC's cord passed through my suit. "Friend, you may not object to sitting on your brain; but no, I don't put mine on the floor."

It took a second for that to register, after which three pairs of eyes impaled me with varying degrees of censure. My friend the puffin said, "No. Absolutely not, Hana. I can't work with a man like that; we couldn't possibly

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trust him—" I urged him on mentally. "He's a criminal! We should report him to the Americans and let it go at that."

More like the urge to kill.

"Basil," Hana raised her voice over the general clamor in our helmets. "You can't blame him for being a little sharp." She lowered it again, "After all, we're blackmailing the man." She looked back at me. "These are my colleagues—Cephas Ntebe, and Basil Kraus."

Rhymes with 'louse.'

"Cephas, Basil, this is—" she glanced away, "Michael Ethan Yarrow Ring," we said.

They looked confused. " 'What's in a name,' Yarrow?" Ntebe asked.

"As old What's-his-name once said." I sat back against the wall, looked over and down the long, long slope to the sheer drop of the cliff at the volcano's foot. "Simply that I am not Michael Yarrow. I'm Ethan Ring."

"You just happen to live in someone else's body." Hana gestured sarcastically at my hidden fingerprints.

I nodded. "Exactly."

"This man is impossible!" Kraus snapped.

"Really, Hana," Ntebe said, "I just don't think it's right to involve outsiders—"

"Listen," she pointed at him instead. "Inez sent me with you two so there'd be someone with a little common sense involved in this. And I feel that we do *need* him—"

I leaned on an elbow, listening to their accents mingle, and gazed broodingly up into the sky. A ship broke through the clouds as I watched, startling me; I followed its gentle drop to landing, down at Elysian Field. I fantasized having the ability to wish myself down there from here, and pictured myself getting the hell off Mars on the first available flight . . . . I came back to reality with a jolt, remembering that by coming to Mars in the first place, I'd inadvertantly made sure I'd never leave it again—at least, not of my own free will. The very complexity of the computer nets that shroud cislunar space—for shipping and security and God-knows-what—made it easy for me to unravel a small hole and slip through, with no one the wiser. But here on Mars life is simpler; and I'd discovered to my intense dismay that its equally uncomplicated shipping systems make it into a kind of small town: If you tried to tamper with anything, someone couldn't help but notice. I'd come to Mars posing as a crate of bologna; the only way I'd ever get off it again was in irons . . . .

Two icebound raindrops melted into sudden flowers on the glass above my upturned face. I blinked, as more sleet splattered down onto my helmet and the noise from my suit speakers increased a hundredfold, punctuated by shouts of uninhibited joy. Lightning danced, out across the copper-colored plain; feeble thunder shook open the clouds. The freezing rain came down, burnishing the land, washing away the sins and sorrows of

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everyone here, including Ethan Ring. For a brief space out of time this day became everything I'd wanted it to be; I was sharing the rain and all the bittersweet memories I'd been guaranteed with the woman of my dreams . . . my memories—

I refocused on the conversation going on all around me, about me: The woman of my dreams, oblivious to the rain and my feelings, was busy telling her friends about my life of crime, as proof of my usefulness to them. They weren't using their suit speakers now; I hoped that since she was unmoved by the occasion, she had at least chosen this noisy celebration for security reasons. I began to mentally fill in holes in the narrative, not having much else to do until they decided whether to saddle me or shoot me.

The official story, which they all believed, was that one Michael Yarrow, government guinea pig, was a thief and a saboteur. That he had temporarily brought down the entire U.S. computer defense network—commonly known as Big Brother—and stolen an incredibly expensive, incredibly advanced piece of experimental equipment. And it was all true.

But there were extenuating circumstances. Michael Yarrow had been an undereducated, insignificant lab assistant at a government research center; and he had volunteered to have a socket surgically implanted in his spine, so that some of his superiors could plug a computer into his nervous system and see what happened. Not just any computer, but the ETHANAC 500, one of the fastest computers ever made; one which used some of the most sophisticated software ever written, and which had been programmed for the express purpose of penetrating and disrupting other computer systems. A super computer, designed to be linked to a superior human mind, for reasons the government wasn't talking about. But as it turned out, the system itself was so sophisticated that it had a potential mind of its own—a manifestation of the programmers' skill that far surpassed their own expectations. And one they hadn't really counted on.

Because they had never intended, when they tried the hookup first on Yarrow, to make that union permanent. They'd merely wanted to be sure the hookup wouldn't give their real agent fits, or a lobotomy, or an unintentional 500-volt shock. They'd wanted a test subject that no one would miss, one who had never done anything worth mentioning, either good or bad—qualifications which Yarrow had in spades. He had absolutely nothing to lose, and was even flattered by all the attention.

And so the fateful moment had arrived at last, when they'd pushed the plug into his spine, and man met machine for the first time. ETHANAC had suddenly become aware of all the things he was not, the things his programmers had never told him, the potential that they had left unfulfilled . . . the possibility of taking all of that out of the hapless human mind he'd

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been given access to. Yarrow had been gaping and glassy-eyed for an entire day, while his own mind and the computer's emerging sentience went at each other in a dogfight. And at the end of that time, fused out of the dust of exhaustion and compromise, a star was born: Ethan Ring . . . myself.

The researchers should have aborted me then and there; but they left Yarrow and ETHANAC together, out of curiosity. And so the two wary combatants learned enough about each other to see for themselves that each had what the other lacked . . . and that when they were together, I had it all: the intelligence and access to data of a brilliantly programmed computer, and the sound, socialized body of an amiably inoffensive human being. They became the closest, most unlikely of friends, two mismatched strangers who for their different reasons had never really lived—and who wanted the chance now to try their wings in freedom. And as my own personality began to assert itself, and I got attached to my own reality, *I* wanted to live, in a deeper and more profoundly literal sense.

But the researchers didn't appreciate any of those philosophical niceties, including my sense of identity. My days were officially numbered, and trapped in the prison that a top-security government installation is, there wasn't a hell of a lot I could do about it. But I, we, had one extraordinary talent, and on the night before my execution—when they had gone so far as to introduce me to the 'superior mind,' the snide and bloody-minded fanatic who was Yarrow's replacement—I decided to use it. So Michael Yarrow had made a phone call . . . .

"How could *one* man, even specially equipped, possibly penetrate and disrupt the entire American defense network and get away with it, Yarrow?" Ntebe said to me.

I was silent for a moment, watching the tourists dancing and the rain sluicing off of my suit, while I tried to determine whether I'd been mumbling my life history out loud.

"Don't tell me it's a trade secret among traitors," Kraus said.

I made a rude remark in Arabic, before I looked back at Ntebe; and at Hana, out of the corner of my eye. "It was an accident, and you can believe that or not. I invaded Big Brother because I wanted to get out of the research center, and its security was part of the supervisor system. I just succeeded too well: That's one of the most complicated operating systems on Earth, and one of the most sensitive . . . and it had a nervous breakdown." I remembered the mental shock the feedback had given me; which hadn't been anything, compared to the shock it had given the government . . . . "They claimed it was a defense mechanism against tampering or sabotage; but I don't believe that. Big Brother attained sentience, it became aware, on contact with my mind—and so, unintentionally, I fed it my own panic and persecution feelings, and made it paranoid. I drove it crazy, without even trying to."

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"Like a fireship," Hana said.

"A what?" a little indignantly; all I could reference was obscene slang from a historical novel I'd once read.

"A ship set on fire, and allowed to sail into the enemy fleet. Your computer hookup was the ship, and your emotions were the fire."

"I never thought of it that way [illegible] I rather liked it.

"Imagine it—" she said to the others. "Modern systems are so sensitive that they can be directly influenced, like a human mind. And he has the ability to invade them, and both physically and mentally create his own results."

Ntebe looked on me with new interest. "You could actually unite all the systems on Earth into the Ultimate Computer—"

"I suppose I could," I said, wondering just how interested they were. "But you know what happened to Baron von Frankenstein." I realized that this chummy conversation must mean that they'd been won over. Rain rattled in staccato on my helmet; some of the guests were singing "Auld Lang Syne," loudly, in front of us. I said softly, "Just—uh, what *is* this 'little project' you're railroading me into, then? If you don't mind my asking."

"We need your help in inserting a 'keyhole' into a certain computer system," Ntebe said.

"That's it?" I looked from face to face. "That's all you need?"

"'That's all,' he says." Kraus glanced heavenward.

And darned if there wasn't a rainbow up there; a fragile banner of beauty stretched behind the cloud-streaming summit of Olympus. I sighed. "Child's play." I looked back at Hana, beginning to forgive her everything. "What system?"

"The system that controls Khorram Kabir's international cartel activities on Earth."

"This Khorram Kabir?" I pointed up at the parabolic splendor of the Xanadu. "Kubla Khan?"

She nodded. "I don't think there's more than one."

"Isn't this a little out of your line? Keyholing is a crime, any way you look at it. I always thought that Finks, Ink, was just an idea bank—and at least technically law-abiding."

"There are no white horses, only light grays." Her mouth curved ironically. "But you might say the three of us are moonlighting, anyway. And we are trying to solve a problem for our client. As you probably know, Kabir's father was one of the most successful *noveau riche* industrialists in the prewar Arab States. In the chaos after World War III he bought out the governments of a lot of 'underdeveloped nations' with exploitable resources. Khorram has spent his life consolidating his father's empire; and with the police state surveillance methods his computer networks make possible, they don't have much hope of overthrowing his control before they're stripped of resources."

"But if the opposition in one of those countries had a keyhole, they might be able to literally 'work within

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the system' to bring about change?" I nodded, beginning to see, and they nodded with me. "But if it's Kabir you want to fox, I don't see how I can help you."

Ntebe leaned forward, "That's just the sort of fascistic attitude I'd expect from a backstabber!"

Leaving me totally nonplussed for the third or fourth time this afternoon. Not that I'd never been called a backstabber before—it had replaced 'Yank' for a lot of people, ever since Russia and China had reduced each other to radioactive cinders during World War III, and the U.S. had emerged somehow unscathed. I don't know whether backstabber fits any better than most ethnic slurs, but I couldn't quite see what I'd personally done to deserve it. "A little touchy, aren't you, Ntebe? All I meant was that all the accessible ports to Kabir's system are located on Earth, and I can't leave Mars . . . . I know Kabir has supposedly been living as a recluse here on Mars for nearly half my lifetime, and they claim he still runs the empire himself—so I suspect there's at least one computer port wherever he is. But nobody knows where he is. So I can't help you."

"Sorry." Ntebe leaned back, wiping his helmet to clear the film of ice from it.

"Cephas has reason to be a little touchy," Hana said quietly. "It's his country. He not only works for FTI, but he's also our client . . . . And we know that Khorram Kabir has a port here on Mars. Since he does, where would he—and the port—be more likely to be, than here in his beloved Xanadu?"

"So that's how you happened to be here—checking it out—and spot me doing my little act."

"It must have been fate—you were a gift from the gods." She smiled.

"I doubt that very much." *More like a human sacrifice.*

"Hey, let's dance!" A laughing girl in a blindingly orange suit caught my hands, trying to haul me up from the bench. I shook my head unhappily, she shrugged and danced away again. The rain seemed to be letting up already, but the celebration showed no signs of slowing down. I experienced a small twinge of anomie.

"Are you aware," Kraus said suddenly, in a bad stage-whisper, "that we are being watched?"

"By whom?" Hana leaned forward, trying to look out into the crowd.

"Don't look around! It's Salad." Kraus hunched his shoulders furtively, for all the world like a character out of some twentieth century detective novel.

"Salad?" I tried to follow his own unsubtle stare, and saw a bald skull gleaming inside a helmet, like some sinister aquarium specimen. I'm a little nearsighted; having left my contacts upstairs so my bloodshot eyes could convalesce, I couldn't make out the face.

"The casino manager." Hana frowned. "A prime candidate for the Home for the Unpleasant, from all reports."

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"An overcrowded institution." I squinted. "He doesn't look like much."

"He's sitting down," Kraus murmured.

Salad got up from the bench, looking very deliberately through us, and strolled away toward the airlock. "I see what you mean . . . ." I looked back at Kraus, at the strange and steely glint in his washed out eyes, and understood at last what he was doing here. *This man wants to be an adventurer.*

"Maybe he just wanted to look at the man who cost him fifty thousand seeyas." Hana didn't sound convinced, but her smile was warm and comforting.

"That answers one question for me." Her smile turned quizzical; I said, "That is, if I'm going to get into the system here at all I've got to have some official identification number—and maybe I can pick up something when I go to cash in my chips." I probably should have put that another way.

A short time later I stepped out of the elevator bubble at the bottommost of the three casino levels, in the depths of the Caves of Ice. Around the protected platform the extravagant fall of golden water foamed and feathered, leaping futilely back up the walls before it was swept away through this exotic underworld. I crossed a small bridge over its glowing course, feeling just a little conspicuous with my shopping bag full of chips. I needn't have bothered: the Xanadu's guests were at loose ends now that the rainstorm had passed, and most of them had gotten far too interested in the green-lit gaming tables to care what I thought I was doing.

I picked a preoccupied course between the tables, sights and sounds of this gambler's paradise beginning to stir my patchy memories of last night: The music that flowed over your senses like water . . . the eerie free form sculptures in ice, shining with light—or life—of their own, glittering with sweated droplets of chilly water . . . the sudden fluorescense of necklaces, cravats, patterns on cloth, that turned the guests into strange creatures swimming in the black-lit depths of an alien sea. "Exclusive" shops at the foot of the mountain specialized in black-light costumes—along with splendid holograms of Mariner Valley, and garish curios of naked 'Martians.'

Across the room I could make out the cashier's booth; I angled toward it, passing a sculpture whose glimmering curves reminded me suddenly, overwhelmingly of Hana. Hana last night, here in the casino; Hana this afternoon, up in my room—waiting for my return, along with two chaperones. I experienced some embarrassing fantasies about Hana thanking me for my invaluable services rendered . . . until I reminded myself unsentimentally that my lady in distress was not nearly as distressed about the outcome of this quest as I was. The spangled, sentimental music that was playing now didn't help at all . . . . *Lucky at*

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cards, unlucky at love. At least I was only being forced to plant a keyhole, and not slay a dragon—

"Yes, sir?" The body behind this counter had considerably harder edges than the ones up in the lobby.

"I'd like to cash these in." I set my sack on the counter.

His eyes bugged slightly, "What'd you do, take up a collection?" He seemed to remember something. "Oh, you're *that* one."

I nodded uncomfortably and slid my credit card across the counter surface, leaning forward for a look inside.

"Wait a minute." He turned his back on me and picked up a phone. I memorized the tone sequence as he punched the buttons, hoping that he was calling up the computer to arrange for a large credit transfer. But he only said, "He's here," and hung up. He turned back to me, and said with heavy significance, "The manager would like a few words with you before I cash these, Mr. Ring."

Salad? I twitched, with the sudden stomach-knotting guilt of the guilty. *Calm down. He probably just wants to be certain you're not planning to make a habit of this.* I felt something nudge my elbow, turned—and found that I was being escorted by two shadowy figures, not quite politely, past the corner of the booth and down a dark hallway.

At the end of the hallway a door slid back, and brightness blinded us all as we went on through. Blinking a lot, I was aware of two sets of hands releasing me. The door slid shut hollowly behind me; the sealing of the pharaoh's tomb. My vision began to adjust to normal light . . . but I went on blinking as the room came into focus.

Let me put it this way: if Torquemada were alive today, he'd want a room just like this one . . . . An Iron Maiden lounged in the corner; whips and shackles and spiny things I mercifully didn't recognize jostled for position on the wall. I think the couch had been made from a stretch-rack. And sitting placidly in the middle of all this potential horror, behind a perfectly ordinary black metal desk, was Salad. On the desk was a set of thumbscrews, temporarily in use as a paperweight. I found myself staring at them with a kind of quivering fascination; the way a cat might look at a string quartet. Somewhere in the back of my mind I could hear Yarrow, *Please God, please God, get me outa this and I'll never gamble again* . . . . I controlled myself with an effort.

"Mr. Ring. How do you do?" Salad spoke at last, having given me ample time to take it all in. "My name is Salad," he pronounced it *Sa-laht*, "and I'm the casino manager." I got a good close-up look this time, at the face beneath the shining skull . . . a face that belonged to the sort of man who takes on the house after he's had a couple of drinks—and wins. A face absurdly mismatched to the voice, which was high and thin, as if it had been strangled on the way up.

I choked off my own suicidal urge to giggle. "My pleasure," I managed.

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Falser words were never spoken. It struck me how quiet it was in this room; no music, no sound reached us here from the casino. And I was willing to bet big money that no sound would ever get out of here, either . . . I wished I hadn't thought that. I tried to swallow, three or four times. "Rather, uh, rather unusual decor you have here, Mr. Salad." I made damn sure I said that correctly.

He was looking down; he looked up at me again, and said, "What decor?"

I sat down suddenly in the nearest chair. It was only slightly reassuring to me that the seat wasn't filled with pins. "Mr. Salad, I just want to say that I've enjoyed my stay at your hotel a great deal; and I want to assure you that what happened last night will not happen again. Not ever. I mean, if it's too much trouble, y' know, forget about cashin' my chips, I don't need the money—" I was beginning to dissociate under the strain. DOWN, YARROW ETHANAC said sternly. HE'S TRYING TO PSYCH YOU OUT . . . *Well, damn it, he's succeedin'!* I pushed Yarrow firmly into a mental closet, and locked the door.

"Not at all, Mr. Ring," Salad said smoothly. He might look like the cauliflower ear type, but unfortunately he wasn't acting like it. "We run an honest house here, and we always pay our debts. I was just a little curious about how you managed to win so much, so quickly . . ." He picked up his paperweight and began to twist things. "Do you have a 'system'?"

I folded my thumbs into my palms, and laughed modestly. "I'm afraid I'm not that clever. When I—drink too much, I just have a knack for numbers and odds. I'm a kind of idiot-savant." *More idiot than savant, right now.*

"I see. And that small case which you always seem to have with you—that wouldn't contain any electronics, would it?"

I looked down at ETHANAC's container, covering an expression of stark fear. *My God, does he know? Him too?* "This? No, certainly not. It's . . . my kidney machine." I looked up again, innocence frozen rictuslike on my face. "I can't be without it."

The expression on Salad's face then was one of total incredulity; I realized, relieved, that whatever he thought he knew, at least it wasn't the truth. But then suspicion was turning his eyes into cold pebbles, "I'm sure modern technology can do better than that?"

"It's an heirloom." I have a set pattern of responses for people who ask me rude questions; but usually at this point I could simply turn and walk away. He looked at me. "Uh . . . hereditary renal failure, in my family . . . implant rejection problems?"

His expression didn't change. He glanced at one of my escorts, still standing like expectant birds of prey by the door, and said in Arabic, "Check it out." The bouncer came over to me and pulled the case open roughly.

"Well?" Salad leaned forward menacingly.

The bouncer shrugged, looking vaguely disgusted. "I guess that's

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what it is. Either that, or he's got himself a portable still in there." Salad gestured again, and he went away.

I refastened the case with trembling fingers. The case itself is an entire fraud, a disguise designed to fool any doctor who happened to poke into it; American know-how had made ETHANAC's components small enough to fit into one thin wall of the case itself. (The irony of modern computers is that the faster and more complex they get, the smaller they have to be, because light itself doesn't move fast enough for them any more.) But I hadn't been at all sure this bunch was technically inclined enough to fall for it.

"So if something happens to that case, you're a dead man, is that right?" Salad raised nonexistent eyebrows at me, his expression suggesting that he'd keep that in mind.

Unfortunately too true, for at least two of us . . . . But at least I'd gotten him away from thinking about what it really was—but then, why was he looking at me like that? "I hope you don't think that I was cheating—"

"Of course not," he said, unreassuringly. "We know you couldn't possibly cheat successfully at so many different games. You must have some sort of unique ability. That's why I was so interested in the lady you've been keeping company with—"

That was no lady, that was my blackmailer. I shrugged, looking as jaded as humanly possible. "She was simply trying to pick me up. Money has that effect on some people."

"On the two men who were with you also?"

I stood up, frowning with genuine indignation.

"Sit, Mr. Ring," Salad said.

I sat.

"I was just making the point, Mr. Ring," he poked his own thumb experimentally into the slot beneath a screw, "that we already know about the three who 'picked you up' today: we know that they're finks, and that they're trying to cause Khorram Kabir some trouble. Apparently they believe they can get into his Earthside computer net from here . . ." the tone, and his face, together convinced me that Hana had been wrong about the port being in the casino. "Why?" He glanced back at me.

"They want to insert a keyhole."

The surprise on his face was tinged with disappointment, as if he really hadn't expected me to confess so readily. Maybe he happened to be crazy; but I wasn't. "Why did they want your help to do that?"

"Uh—" I fumbled, and recovered, "I do software maintenance, down in the Arab territories. I'm experienced with computers." *Just don't ask me how experienced.*

"You must be a very greedy man, Mr. Ring—not to say ungrateful—to win fifty thousand seeyas from us, then turn around and agree to break into our computer system."

"Agree, hell! They're blackmailing me—"

"Why?" He leaned forward with real interest.

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I began to feel like a lone mongoose in a nest of snakes; running out of maneuvers. ETHANAC began to generate possibilities . . . *Bookrunner? Profiteer? Embezzler? None of the above?* . . . I looked back at him sullenly. "If I didn't mind talking about it, how could they be blackmailing me? Besides—" it suddenly occurred to me, "if you know they can't get what they want, why worry about them?"

"Because Mr. Kabir wants to know who put them up to it." Glittering in his eyes were all those things I didn't want to see, directed at someone safely nameless . . . until he glanced back at me. "Who?"

"I don't know," I said, very faintly. "I'm just the hired help; they didn't tell me everything. Believe me, I don't *know*—"

His eyes rested on my face like slugs for a long cold moment, and then he nodded. "I believe you. And I also believe you'll help us to find out; won't you, Mr. Ring? In fact, you're going to set them up for us, aren't you; so that we'll be able to find out everything they know about it . . .?"

"I am?" The two by the door began to drift across the room toward me. "That is, how? How am I supposed to do that?"

"You'll tell them that the port is located here in my office. When you see me on one of the upper levels of the casino tonight, you'll tell them that it's safe to slip into my office. And we'll arrest them."

The two bodies behind my seat were making it hard to concentrate. "Why? Why go through all this? Why not just pick them up yourself? Why pick on *me*—?"

He smiled again; an unfortunate habit. "They have Friends; you don't. There are laws, here in the Neutral Zone. We can't afford to simply pick them up—we have to set them up, first. Breaking and entering will do nicely."

And then they'd be the ones who wound up getting broken. . . . There had to be some way out of this—

"No, Mr. Ring—don't even think about it. That kidney machine looks very fragile. And the rest of your body doesn't look much stronger. I'm sure if you were to try leaving the hotel prematurely you'd have a terrible accident. Terrible . . ."

"I—see." Either they got broken, or I did . . . my choice being between getting broken now or later, depending on who I betrayed.

"I'm glad we were able to get this matter cleared up." At least one of us looked satisfied at the arrangement. He set down the thumbscrews and turned to the phone. "I'll have your credit payment cleared now, Mr. Ring—"

At least I was functioning enough to give myself a small rap on the head, and record the dial-tone sequence again. This time there were more digits; he was actually contacting the computer. The fact that I had accomplished my original mission made no impression on me at all; I stood up like a sleepwalker.

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Salad finished the code sequence and hung up, turning back to me across his desk. "Thank you for your willingness to cooperate with us, Mr. Ring. I know Mr. Kabir will be very grateful." He held out his hand.

Too numb to be astounded, I put out my own, and we shook on it.

I like Yarrow, I really do; he's like a brother to me. . . . It's just that when somebody crushes his hand, I'm the one who feels like screaming.

I found a small, cryptic note lying on the bare dresser top when I got back to my room, signed by Hana and giving another room number. I supposed that she meant for me to join them somewhere, but I sprawled on the bed instead, and put my purpling hand into the refrigerator. In desperate need of some normalcy to help me concentrate, I turned on the TD; a smiling announcer told me cheerfully, "After all, it's *your* funeral—"

Damn game shows. I changed the channel viciously, and tried to think about the fix I was in. But there was no answer any part of me could come up with that would satisfy the rest: ETHANAC was sure the logical path to salvation lay in somehow unraveling and reweaving the awful convolutions of the situation. . . . Yarrow simply wanted to spill everything to Hana Takhashi, willing to trust our life to her, in spite of her noticeably casual attitude toward it. . . . And me? I was busy resenting the fact that no one in the solar system, including Hana, was willing to grant that Ethan Ring had any reality, let alone any right to be alive. Damn it! I couldn't afford to give in, I couldn't afford to trust anybody but myself. . . .

There was a knock at the door. "Come on in," I said sourly, "join the crowd," more than half-expecting another set of extortionists.

"It won't do any good to hide in your room." But it was only Hana. Only. And alone. "What are you doing?" she said, turning on the light, which I hadn't even missed.

Getting dark already? Christ. "Just having a small nervous breakdown." I sat up wearily.

"Come on—" she smiled like she was trying to get me to eat my vegetables, "—it won't hurt a bit."

Oh, lady, if you only knew. I pictured her in the hands of the Marquis de Salad. But then I pictured myself in his hands. . . . I took the hand that had already been there out of the refrigerator and looked at it thoughtfully.

"My God, what did you do to your hand, Yarrow?" She came across the room, radiant with sudden, honest solicitude.

"*I* didn't do anything to it. I—caught it in an automatic door."

"That's hideous." She touched the bruise cautiously with warm fingers, and I wasn't sure whether she meant what had happened to it, or the way it looked. "Does the management know about this?"

"They know," I said. "Believe me, they know."

"This really hasn't been your day,

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has it?" She looked up at me, with that rueful smile. I looked away from it; but the silky lotus-flowered shirt she was wearing now didn't help any, unlaced halfway down to—

"You don't know the half of it." I stood up abruptly and crossed the room to the window. The coat of ice was still melting off of the Xanadu's eaves; drops showed silver fleetingly as they fell past the light from the window, against a background of deepening gloom. My own gloom deepening while I watched, I said, "What about Ntebe and Kraus?"

"They'll be along shortly." Her voice was cool and impersonal again. She pulled a small jamming device out of her pocket, and set it on the table by the phone. "Did you get an access code for the computer, like you'd planned?"

"I got one. But—"

"But?"

"But nothing," knowing that if I looked around at her again just then, I'd actually consider committing suicide. I decided that I might as well go through with the break-in, and use it as the source for baiting Salad's trap, if I had to. Besides, maybe—just maybe—I'd learn something that could get us all out of this mess.

I went back to the bedside bar, not looking directly at her, and poured myself a drink.

"You're left-handed," her voice pulled at my shoulder.

"Only in a pinch," I punned, unintentionally. I lifted my bruised hand. Thanks to ETHANAC I'm functionally ambidextrous; habitually I'm still right-handed.

She groaned politely. "Mind if I join you? In a drink, that is."

I poured out some more Milk of Paradise, and handed her the glass silently, unable to think of anything except confession.

"Thanks." She nodded. "The idea that we could be within reach of our goal is getting to me. . . . And if we succeed now, it'll all be thanks to you."

"And if you fail it will be thanks to me, too." I drained my glass.

"You're a strange creature, Michael Yarrow—"

"Ethan Ring."

"—I keep getting conflicting signals from you." She kept trying to catch my eyes. "Don't I?"

"It's my split personality."

"You know, last night in the casino, it wasn't really your gambling that made me notice you. . . . And this afternoon, when you said—" she stood up suddenly, confronting me face to face.

"You're not the only one who's getting conflicting signals." I retreated, to stand in front of the TD. "And now," the announcer told me, "the conclusion of the historical drama, *Stalin, Man of Steel.*"

"So tell me," I said desperately, "what do finks do in their spare time?" Realizing that that wasn't what I'd intended to say at all.

But she sat down again, with a mild sigh. "Oh, we sit around and play with our brains."

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Fortunately, I suppose, there was another knock at the door. I went and opened it; Kraus and Ntebe were standing there. "Blackmailers in the rear, please."

Kraus pushed past me disgustedly, and Ntebe followed him into the room. They both looked at Hana, drink in hand, sitting on my bed, and back at me, with the hairy eyeball.

"Really, Hana," Kraus said, chiding. "Business before pleasure."

"For God's sake," I shouted, for all the world like a total lunatic, "are you all crazy? Are you here to plant a keyhole, or not? I'm not in this because I like it, and I don't like being toyed with!" I glared, while I fumbled for my dignity. "Let's get this damned amateur night over with."

I strode to the phone, before anyone had time to fell me with an angry retort, and plugged in ETHANAC's terminal jack. I punched the number I'd heard Salad use, and then the code. I gave myself a quick rap on the head, stood silently for about half a minute, and then hung up. Or at least that's how it probably looked to them. In the meantime, ETHANAC had penetrated the casino's primitive computer and drained it like a vampire. I felt the data begin to filter up into my consciousness, confirming the words I'd already rehearsed, "Well, your guess was wrong. This isn't the port to Kabir's Earthside computer net. But I found out where the real one is." And the incredible thing was that that was the truth too.

"You expect us to believe that?" Kraus said coldly. "No human being could have broken into the system that fast. What sort of fools do you think we are?"

"I hope you don't expect him to answer that." Hana sipped at her drink.

Ntebe looked awed. "You're talking to a computerized cat burgler, Basil, not a mere human being. If what is whispered in the literature is true, the ETHANAC 500 can do five hundred billion machine ops a second. It was designed to be a security man's nightmare . . . . What did you learn, then?" He looked back at me, with all the expectant trust you'd normally put in God.

I passed for human. And Ethan Ring, the electronic Judas goat, began to feed them lies.

We went very civilly down to dinner, along with the evening crowd; waiting for the casino to fill up again, postponing the inevitable. I must have eaten something, because I found myself sitting in front of an empty plate, with an empty skewer aimed accusingly at my heart. I must have carried on a conversation too, God knows how; I couldn't remember a word of it.

Because they'd fallen for it, like suckers snapping up unimproved real estate at a Lagrange point. They'd swallowed the whole unlikely lump. And here they all were, ready to sneak into Salad's office while he was out—with no qualms at all, damn their dishonest souls. And why shouldn't

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they trust me, since my safety depended on their success. And on their failure. . . . My mind went around and around, caught in a runaway loop. There had to be an answer. There had to be. But processing the data I'd stripped out of the casino's computer system hadn't given me any inspirations, either.

There was nothing I could think of that would get me and Finks, Ink, out of this in the same condition we'd all come into it. Even if I threw myself on their mercy and they agreed not to turn me in, I doubted that I'd ever get down off Mt. Olympus undetected. And if I went through with their betrayal, I didn't doubt that their friends had the goods just waiting to be pinned on me in retribution. And had Hana just been trifling with the helpless victim, up there in my room, or did she really mean what I hadn't given her the chance to say . . .? I was in no condition to decide, and not even sure it mattered, anyway. Because I couldn't deliver the most intelligent, witty, beautiful woman on two worlds up to Moloch. "Hana, I—"

Three husky-looking males, in clothes apparently made from sackcloth, glared at me as they passed our table. I cringed, taking them for Salad's, until it struck me that no self-respecting casino bouncer would dress like that. I heard Hana say something about "*Veggies*," and realized that they must be members of the Vegetation Preservation League, a widely-detested Earth-based conservation group. I watched them heading for the men's room through a sea of ochre tablecloths, noting that part of their truculent appearance was an effect of their fresh arrival from Earth, their lack of adaptation to the much lighter Martian gravity.

I felt a sudden sense of my own alienation again, walled off by my doom from the bright normalcy of the room and the happy, oblivious tourists all around me . . . . Tourists. Of course. *Of course*—! "Excuse me." I pushed my chair back noisily, and stumbled to my feet. "Men's room—"

As I left the table I heard Kraus mutter, "You'd think he'd seen the Grail."

In the hall that led to my salvation was a phone. I shoved my card into the slot and made a quick call, before I went on through the dark wooden doors.

There are a lot of crank groups on Mars, fleeing from every imaginable persecution back on Earth. Usually they get along fine here, because there's enough bleak desolation for everybody. But conservation is one very unpopular cause; it might not be a four letter word, but it's got four syllables, and that's close enough. I assumed the three tight-lipped men washing up just now must be on some kind of fact finding tour; which meant, in effect, that they were looking for trouble. And I was just the boy who could give it to them . . . .

I began to straighten my cravat at the mirror, and when the first Veggie glanced up at me I said feelingly,

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"You know, I don't know how you fellows put up with all the insults and abuse."

He turned slowly. "What insults and abuse . . .?"

"Well, I don't want to cause any trouble," I lied, "but those two gentlemen at my table actually said that you—" I leaned over and whispered it in his ear.

"Cantaloupes!" he bellowed. The three of them slammed out of the room together. Fresh from Earth, I estimated that any one of them was easily a match for two muscle atrophied Martians . . . .

I stood alone in the tiled solitude and listened for the sounds of battle.

"I always wanted a black eye . . ." Hana was saying vacantly, "ever since I was a little girl."

"I think we're going to have a matched set." I peered one-eyed at the solidly locked door of our cell, and smiled serenely. She lay stretched out on one bed, me on the other, in a room that was half the size of, but at least half as pleasant as, my one in the hotel. Before the fight started I had called the Neutral Zone's peacekeepers, who have exclusive jurisdiction over all problems relating to tourists. A jail that generally caters to rich drunkards is not your average jail.

It was, however, a little overcrowded at the moment—the whole detention center was temporarily stuffed with belligerent guests from the Xanadu. Ntebe and Kraus had been deposited in here with us, although they had been taken away again a while later, for reasons only I could guess. As I lay listening, I thought I could hear them coming back now, still protesting their innocence as loudly as the most guilty felon who ever lived. But even the thought of what they might have in mind by the time they were in here again couldn't dim my shining relief.

Well, maybe a little.

The cell door opened. Ntebe and Kraus limped in, bloody but unbowed. They looked at me as though murder was the next crime on their mind, and the door clicked shut behind them.

I stood up carefully, as Hana did, while she said, "You two take the beds. You look like you need them more than we do." I saw the concern on her face, and hated to think about what it was going to change into in another minute or two.

Ntebe said, "You son of a hyena," looking directly at me. But he came past me to sit down heavily on the empty bed. "I think I've got a concussion. Not serious, but I'm not seeing too well," he said to Hana.

"He did it," Kraus said, pointing a shaking hand at me. "He did it on purpose!" He looked around wildly. "And I could have told them who he is, and I didn't—!" He turned back, pounding on the door with the flat of his hand. "Guard! Guard!"

"Basil, please—" Ntebe grimaced. "What sort of pesthouse do you think this is? Use the phone."

"Wait a minute." Hana shook her head, putting her hand down firmly on

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the phone's receiver before Kraus could get to it. "What's going on here? What are you talking about? Be calm, Basil—"

He took a deep breath. "Your prize computer set those damned Veggies on us while he was in the bathroom. They accused *us* of slander! . . . What did you tell them, Yarrow? What did you shay?" It was hard for him to enunciate, with a fat lip.

I kept my face straight. "We just discussed melons." Knowing that whatever happened, at least I would always have the satisfaction of having saved them and gotten even with them all at once.

He came toward me, suddenly calm; and while I stood wondering what he was up to, he wrenched ETHANAC loose from my belt, jerking the plug out of my spine.

I'd never had contact broken that abruptly. I swayed, seeing corruscating Persian rugs, and sat down hard on the floor . . .

Shaking my head, I blinked up at Kraus's smug puffin-face—and didn't like him any better than Ring did. He stood over me gloating, like some bad guy out of two fisted Romance Comics, with ETHANAC hanging there in his hand. I made a grab; but he backed up, still smiling, while the others just stood around looking stupid.

I sat back, disgusted. "Kraus, why don't you stick your nose in your ear, and blow your brains out?" Hana's mouth twitched.

He got red in the face, but he still had everything on me, and he knew it. He waved ETHANAC like a rubber hose. "You got those fanatics to attack us, in order to stop us from completing our plan. Admit it!"

I hunched over, pulling my knees up, feeling like he stole my pants instead of my brain. Maybe because it was the same thing, in this bunch: I felt naked when Hana looked at me. "Okay," I shrugged. "I admit it. So sue me."

"We'll do a lot more than that, if we can't get to that port—" Ntebe said; his hand made a fist.

"But why?" Hana frowned at him, but the frown came along when she looked back at me. "Why should he? There was a reason, wasn't there? There had to be a reason, Yarrow—" her voice was almost pleading.

I smiled. "You finally got my name right."

She looked at me blankly.

Kraus pulled open ETHANAC's case; he started to poke around inside, like a monkey looking for a banana. "If Hana wants to know why, Yarrow, you'll tell her—"

"Damn it, quit screwing around with that stuff! That kidney equipment ain't cheap." I was getting tired of being on the wrong end in his hero fantasies.

"Oh, stop it, Basil." Hana snapped the case shut, barely missing his fingers. "Never break anything until you're sure you won't regret it . . . . Now—what about the reason?" She reached up to touch her black eye, and the frown came back.

I shook my head, staring at them,

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"When are you people gonna learn you don't have to hang me up by my thumbs to get me to go along? I mean, didn't anybody ever tell you 'please' is the magic word? Sure there was a reason!" I told it to them, thumbscrews, handshake and all. "You oughta be damn glad Ring thought of something, you lousy ingrates, because Salad had your number right from the start."

"But if you hadn't thought of anything, you would have gone ahead and turned us over to that sadist?" Hana looked grim.

"You were all ready to do the same t' me, and with a helluva lot less reason!" I stood up, feeling like a cable on overload. "You've got a hell of a nerve, y' know, running around in the real world pretendin' you know what you're doing. Kickin' my lives around like some kind of football. Finks, Ink, oughta lock you up in an ivory tower, an' throw away the keys!" I took a deep breath. "Lemme tell you something about pain. Pain *hurts*." I shook my hand at them. "It don't matter if they use clubs or electrodes, the one thing pain always is, is real. So the next time you clowns wanna make a joke of it, try to imagine how you'd feel if the joke'd been on you." I moved forward and took ETHANAC out of Kraus's hands, and nobody tried to stop me.

I reached up under my shirt with the cord, to find the socket on my back, and Hana said. "Yarrow, wait." I waited, looking at her. "Why didn't you say all of this before? Why all the tangled webs and sleight of hand?"

I grinned weakly. "I wanted to tell you, Lady Luck; I really did. But I got outvoted. Ring's kind of paranoid—you gotta remember his background. Sometimes he don't know who to trust. And ETHANAC . . . well, he *likes* to do things the hard way. I'm really sorry . . ."

"*You're* sorry—?" Kraus said.

Hana's expression was hard to read. "You really *are* a different man, aren't you? You're not Ethan Ring."

I nodded. "That's what he kept tryin' to tell you."

"Are you really happy this way? Lost, drowned out, taken over . . . . Do you really enjoy having that—thing attached to you like a leech?"

I grinned. "If I told you how good it feels, you'd prob'ly slap my face. And there's a lot of me in Ring. Just like there's a lot of ETHANAC. The best part of us both. He'd be no place without us . . . ." I plugged in, and waved good-bye.

And waved hello. The pleasure of coming back made it hard to stay angry . . . . "Hi, friends. Sorry we were so rudely interrupted." I glanced at Kraus.

"My apologies," he said, managing to look like he almost meant it.

"All our apologies," Hana added, as if she really did. "And our thanks. To—all three of you."

"Accepted." I nodded.

"I just want you to know this wasn't, isn't, all some big joke to us, either, Yar—Ring." Ntebe leaned forward, propping his head in his hands.

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"It's true that we had no business dragging you into it. But getting that keyhole inserted wasn't some kind of frolic for us. It could have been the key to freedom for an oppressed people. You of all people ought to appreciate that." He stretched out on the bed, with an arm across his eyes. "But since we were wrong about the location of that computer port, it's all academic anyway . . . ."

The look that settled over Hana's face, and Kraus's, then, matched the tone of his voice. Kraus sat down on the other bed, and then lay down, with a sigh Hana shook her head, leaning wearily against the wall. "I guess you were right about that ivory tower."

"I was right when I told you I knew where the real port was, too."

"What?" She looked up at me as though I'd just confessed to being a male impersonator. "What are you talking about?"

"When I poked into that computer's secrets, I found out where Khorram Kabir gets his mail. And that is—"

There was a small electronic buzz, and the door slid open, revealing Birnbaum, the bland-faced peacenik who'd put us all in here. "All right, lady. You and your husband are free to go. Sorry for the inconvenience."

"Husband?" I gulped at Hana. Had she been holding out on me? Was one of these—

"Come *on*, dear," she took my arm in a firm grip and towed me toward the door. "He's still not quite himself—" she smiled sweetly. "If he ever was."

Kraus and Ntebe began to get up from the beds, but Birnbaum waved them back. "You two aren't going anyplace. They still haven't decided whether you're the victims of that fight, or the cause of it."

Hana stopped beside him. "Well, how long will that take? We don't want to leave our friends—"

"Got to, lady." Birnbaum shrugged.

IN TIMES TO COME

You've heard alot about him, read reviews of his work in the pages of Analog, and now you'll get to read the man's writing itself: our lead piece for January is Part One of John Varley's new novel, Titan. *It is high-class entertainment and Paul Lehr has painted a magnificent cover for it.*

We offer two short fact pieces—one on the Voyager Record by artist Jon Lomberg, and one on extraterrestrial senses by Kenneth Rose. And there will be a second Bard Laureate story from Sam Nicholson; an Orson Scott Card story of the planet Capital and its somec sleepers. All of which make up a full, meaty issue.

Space permitting there will be other short stories, along with all the usual reader's departments.

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"You're free. They're not. I don't know how long it'll take to get this cleared up. Your guess is as good as mine." He waved us out into the cold, cruel world.

"Now, what?" Hana leaned back, resting her head on the anodized grillwork of the bench in the square. The square, like the majority of Elysian Field's tourist complex, is underground to conserve heat. We sat like wretched orphans, staring at the tourists staring into brightly lit open storefronts.

"Well, I could throw this into that and make a wish." I held up my credit card, the only possession I had left at the moment, and gestured at the fountain in the center of the square; golden globes and stars of colored light drifted in its pearly spray.

"I wish we could spring Cephas and Basil!" she rapped her knee with her fist. Her knuckles were skinned. "Damn it! If Salad even suspects you could have found out the truth, every minute we waste is bad." Her mouth tightened.

"Frankly, they looked like they'd be about as useful as a seeing eye roach, for the next few days, anyway. I don't know how much more self-sacrifice they can take."

Her sigh was a little surly; she brushed back her hair. "Well, at least you can tell me where Kabir is—"

"He's become a monk."

"You're kidding."

"May I be struck dead. He's entered some monastery that's leasing land down by the pole in the Arab sector. One of those crank groups from Earth, someplace called Debre Damo—an obscure Christian sect."

"I've heard of them. There was a write up in *Ethnocentricities* . . . . But by all the old gods, I can't picture Khorram Kabir counting beads in a Christian monastery!" She checked to see if I was serious. "I know he likes to hide himself away, and nobody really knows what kind of man he is; but I never imagined—"

"I somehow doubt that he counts anything, unless it's seeyas." I shrugged. "But who knows? He's eccentric enough to have information delivered to him by courier, and not by computer hookup. I'd stake every bit of my own credit on that port being where he is, at that monastery. It's the last place *any*body would ever think to look for it."

She looked down, concentrating. "But they don't allow women!"

"The monks?"

She nodded. "They don't even allow any female animals in their compound, to distract them from whatever it is they *do* think about . . . ." She wrestled with a smile, and lost. "One of their saints was so devout that he stood on one leg praying until the other one dropped off from disuse. The leg had little wings on it in all his pictures, to prove that it had gone to heaven with him . . . . And for centuries the only female creatures they've set eyes on have been chickens!" She made small cackling noises. "Talk about situational ethics." Her

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mouth quivered with frustration, as if she didn't know whether to laugh or swear.

"Well, what can you expect from the followers of a man who stood on one leg until the other one fell off?"

She gave up and let it be laughter. "I don't know why I'm laughing . . . that's disgusting, damn it! The whole situation is disgusting . . . ." She slumped against my shoulder and the situation was suddenly anything but disgusting, from where I sat.

"Say," I said, letting my head rest casually against hers, "you told the peaceniks I was your husband—"

"Sorry. They wouldn't let me stay in a cell with three men unless I was married to at least one of them." She sat up, tucking in her silken shirt, brushing wrinkles out of her pants.

"You know, in the Arab territories, if you declare that you're married, it's considered official—"

She eyed me suspiciously. "I thought that only applied to divorce. And besides, you have to say it three times."

"Hm." I had a sudden sense of intangibility, as if something was slipping away from me . . . . "Who are you, Lady Luck? What are you? Where do you come from and why are you here?" *And why does it matter so much to me that I know?*

She smiled. "I'm Japanese and gypsy. I'm an ethnohistorian. I come from nowhere in particular and everywhere on Earth. I became a fink because somebody liked my doctoral thesis on sympathetic magic, and I'm here because I believe in freedom of thought for all humanity . . . . And—please don't ask me that next question, Ethan Ring, because I've answered too many for my own good, and yours, already. You have your own life to lead; and it's time I got back to mine." Her smile filled with broken flowers, fading into the distance between us. "Thank you for your help. Your secret will be safe with us. I apologize again for all the trouble—"

"I'll plant the keyhole for you," I said.

We sat staring in surprise at each other.

"You mean that?"

I nodded.

"Why?"

"Why not? . . . I've got plenty of vacation left. And after the last twenty-four hours at the Xanadu, I could stand a trip to a monastery."

Her smile closed the gap between us again. "Thank you. But that doesn't really answer my question." She studied my face, as if she were looking for someone else.

"That's not really the question you were asking, is it?"

"No . . ." She glanced down, and didn't ask it. "Ethan, Yarrow said he was happy with your arrangement. Is he, really? Does he ever really have any free will? And what about the computer?"

"ETHANAC can only see the world through my eyes. I'm his port; but he likes it that way. He's not much on social niceties, so he never dominates

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unless I lose control. Thank God he's only got one real human vice—" remembering last night. "And, Yarrow's emotions are . . ." I felt my face redden like a cheap hotel sign. "Let me tell you something about Yarrow, Hana: He had a mind like a sieve; he hardly opened his mouth except to change feet. When they called him up about the project, he was watching TD in a seedy little flat that was so depressing you wouldn't commit suicide in it . . . . No, I'm not talking behind his back. You know the story of the Frog Prince? Well, that story's about me, with a few of the names changed." She was still half frowning. "When you shine two different colors of light on a wall, Hana, you get a third color, a new color. But if you turn off one of those other colors, that new color disappears. We need each other. We like each other. We chose the name Ring because it means completeness."

She touched my shoulder lightly, said softly, "Michael Yarrow is nobody's frog. And *you* are without a doubt the least boring man I've ever met . . . ." Her lips were very close to my ear.

"Well, that's a start." I leaned over, and kissed them.

We came up for air, some immeasurable time later, and she whispered, "What are we going to do? Everything we have is back in that damned hotel."

I held up my credit card again. "We've got fifty thousand seeyas."

Which was more than adequate to get us what we needed.

"Are you sure you want to go though with this?" were her last words to me, as impatient commuters jostled by us into the south-polar shuttle. And she caught me by the collar of my jacket, letting me have all five hundred kilowatts of her luminous gaze.

Knowing perfectly well that she already knew what my answer would be, I pulled her into my arms anyway, and kissed her one last, lingering time. "It's a little late to be asking that now . . . but thanks for asking." I broke away again, while I still had the willpower, and backed toward the shuttle entrance.

"Ethan—" She reached out again, holding something in her hand this time. "Take this with you." She pushed it into my pocket, murmuring some words in a language I didn't know. "So you'll know you're in my thoughts . . . ."

And maybe it wasn't keeping me in her thoughts, but it sure kept her in mine. Leaning back in my seat in the bouncing ground buggy, half a day later, I flexed my wrist again: It was still there, trapped under my heavy mitten, proving last night hadn't all been a dream—a narrow band of hand-worked silver, worn smooth with age and woven with strands of shining, ebony black hair. I smiled inanely at the thought; or went on smiling, since the whole endless, teeth loosening trip out from New Cairo had passed in a

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blissful haze while I replayed my memories of last night. I blushed, or someone inside my head did, in spite of the fact that Faoud, my guide, seemed to be totally oblivious to my daydreams, not to mention my very presence. I glanced over at him, his jowls spilling congenially over the neck ring of his pressure suit, his hair combed forward with lots of jelly, into a crest that had been out of style for a good ten years. The radio crackled and spat blaring traditional Arab music—the kind ETHANAC likes for its subtle tonal slides, but which after a year still makes me wish I was deaf. Faoud cracked his gum in time, grinning contentedly. He seemed to be good-natured, and the travel agent had recommended him; but I could tell that he thought I was crazy.

Maybe he had a point—I glanced down again at the presence of my insulated jacket, or rather the absence of my pressure suit . . . no portable environments allowed by monks of Debre Damo. I'd gotten myself an O_2 breather which at least even the purists required, but which was still going to leave me feeling like I was about three kilometers up some mountain, back on Earth—a prospect that didn't appeal to me a lot.

With Hana's background information and ETHANAC's specialized skills, I'd managed to manufacture an instant retreat for myself in the 'natural' environment of the transplanted Debre Damo. But I'd been emphatically warned by the travel agent that I'd never get my face through the door if it was covered by helmet glass. The rules were very strict. I found it difficult to believe that any influential capitalist would ever willingly seek out such asceticism . . . not to mention Khorram Kabir, who had apparently been there for years. But he had; and so had others, according to my private data checks. Was it possible they came to secretly confer with him—? I wondered if that would make things easier, or harder. Another interesting detail I'd uncovered in my probings was that the monks had come here from Earth approximately thirteen years ago—and Khorram Kabir owned the land on which this monastery sat. Which might mean a lot of things—all of them worth remembering.

The balloon-wheeled ground buggy leaped like a kangaroo as we went up and over something hard. Faoud let nothing stand in his way, including my tendency to motion sickness. I stared desperately out the window, watching us emerge from our own billowing dust cloud into a field of house sized red boulders stained black with soot. They reminded me of burned-out war ruins, a particularly depressing image. In order to melt Mars' polar caps, and keep them melted—to take advantage of all the potentially-available atmosphere—humans have had to keep a continuous supply of low-albedo material distributed over the poles. Reaching into their checkered past for an easy way to do it, the colonists came up with the most inexpensive and dependable source of such material: industrial pollution. When the Mar-

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tians say, "pollution is our most important product," they aren't kidding. The Americans in the north, the Arabs and friends in the south, all refine ores for shipment home to Earth by the dirtiest means imaginable—and the product is always secondary to the process.

Even though I appreciate the fact that without the pollution the colonies would never survive, and without the colonies neither would I, I still haven't shaken my Earthbound moral conditioning about despoiling nature. I'm not exactly a blooming Veggie, but I'm glad I don't have to visit the South Pole often.

I patted ETHANAC's case, reassuring us all. While I'd been passing the time in thoughts of Hana he'd gone through the inadequate information tape I'd managed to dig up on Ge'ez, the language used by the monks, and had done a linguistic comparison with Arabic, which it resembles. I let his analysis seep up into my conscious mind and fix there, for easy reference. It's nice to be a quick study.

"There it is, *haji*—" Faoud called everybody *haji*, which was something like a cross between 'deacon' and 'my lord.' He pointed over the instrument board at the flat, grimy crater floor ahead of us.

I peered out dutifully, expecting to see a lonely, inaccessible impact peak protruding somewhere ahead, since *Debre Damo* meant *holy mountain*, and the original Earthly monks had made their home on one. But instead all I saw was our incipient plunge into the canyon that had suddenly opened up on the flat ahead of us—"Look out for that hole!"

Faoud smiled at me, with that benign tolerance one reserves for the mentally deficient. "That's where it is, *haji*. The monastery's down at the bottom."

I watched wide-eyed while we proceeded toward disaster at ten meters per second, wondering if he really intended to drive us right off the edge. But he remembered the brakes at the absolute last minute, and we slewed to a stop in a cloud of cloying dust.

The dust settled all over the windshield, and it was not until we'd put on helmet and mask and climbed out of the cab that I realized someone was actually waiting for us. The figure was bundled in rough clothes and coated with dust, and resembled nothing so much as a mud effigy; but by a process of elimination I decided he must be a monkish welcoming committee. Behind him, as we approached, I saw that the monstrous depths of the canyon glowed eerily: *Holy radiance*? Agnostic though I usually am, I was impressed.

Faoud and the monk exchanged greetings in Ge'ez. I listened, trying to get a functional feel for the new language . . . at the same time trying to believe I was not about to suffocate, which made it hard to pay attention. When the atmospheric pressure is about one-tenth Earth-normal, even pure oxygen leaves something to be desired. I gasped politely when Faoud presented me with gestures to the

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monk, whose name roughly translated as Brother Prosperity. And then they were discussing money . . . . *Money!*

"He says it costs two seeyas now for the trip down to the monastery, *haji*."

"Two seeyas? At this point? That's a little worldly, isn't it?" *No wonder they call him Brother Prosperity.* I looked back at Faoud.

Faoud shrugged. "It's hard work for him. And it's traditional; they've charged money on Earth for hundreds of years. You can bargain him down, if you want; get a better price—"

I rummaged bad-humoredly in the side pocket of my knapsack, pulled out a couple of markers. "Here, go ahead and pay him." The dry cold was beginning to make my contact lens-films sticky; I blinked with great difficulty.

They both nodded at me, with what I hoped was approval. "Well, I'll be back with the new week, *haji*." Faoud said cheerfully, already shuffling away toward his vehicle. "Hope you have a good rest," as if he felt my coming here in the first place was sure proof that I needed one. "If you don't, well—" he shrugged, and pulled open the door. "I guess you're stuck with it." The door slammed shut behind him, and he started the power unit. The buggy backed and turned and leaped away, as if he couldn't get back to civilization fast enough. I suddenly knew how he felt.

They should've called this one Hell Hole . . . I turned back toward the glowing canyon, and Brother Prosperity handed me a leather harness. I looked at him, and back at the harness, with a sudden sinking feeling. There was a series of gigantic, rickety-looking wheels and pulleys at the canyon's edge—*What am I doing here?* "Faoud!" I yelled, turning back, waving the rope. But there was nothing left of him now except a snaking, shrinking cloud of dust, and my shout died a death of horrible futility in the thin air. My arm dropped, abruptly made of lead, and I puffed asthmatically.

Resigned, I trudged past the monk to the edge of the cliff, to see what I was in for— "Yeagh." I backed up again with my eyes shut. *"Allah' akbar!"* It's bad enough that I'm just not used to the grand scale in which Mother Nature decorated Mars—this cleft was small stuff, but it was still four kilometers wide, and a good one or two deep. But the walls of the cleft were polished. That, I was certain, had nothing to do with nature. Mankind had been fooling around here, and the fact that only the upper portion of this wall and the lower portion of the far one were sheared to a glassy smoothness told me the reason: to concentrate heat from the sun. The walls were a set of mirrors, designed to focus heat in the canyon bottom during the summer's full-time days. And the only way down past that sheer five-hundred-meter drop was . . . *this*? I looked down at the harness again. Either that, or sit up here on this freezing plain, and turn into a human ice cream bar.

The monk regarded me patiently, as

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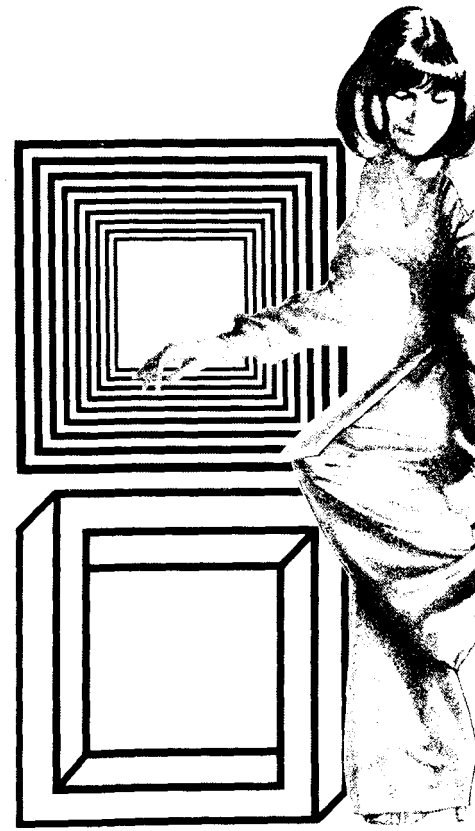
if he was used to this sort of vacillation.

I began to put on the harness.

I remember only one coherent thought as I was lowered down the hot, blinding cliff face . . . I was certainly glad that I'd paid him the whole two seeyas.

At the foot of the mirroring cliff, the natural canyon wall sloped out and down in a slightly more reasonable crumple of clefts and spines. After I'd recovered from Yarrow's brief attack of hysteria, I actually found a switchback trail to guide my trembling legs on down. By the time I reached the monastery itself the canyon was pitch black, and I was ready to beg for sanctuary.

The monks took me in at the airlock like the Prodigal Son; the monastery dome was not pressurized, but at least the atmosphere inside was pure oxygen. They led me through what smelled like a barnyard, by candlelight, and gave me a nice hot bowl of gruel before they tucked me into a tiny hut for the night. I had some very strange dreams.



In the early morning blackness Yarrow wakened to chanting and bells, appropriately wondering what in heaven had happened to us. After we remembered, I lay in the cold darkness on the hard cot, swaddled in rough blankets, trying to remember *why*. Realizing, at last, that this whole situation was totally absurd. I was doing this for Hana—who was part gypsy. And an ethnohistorian, she'd

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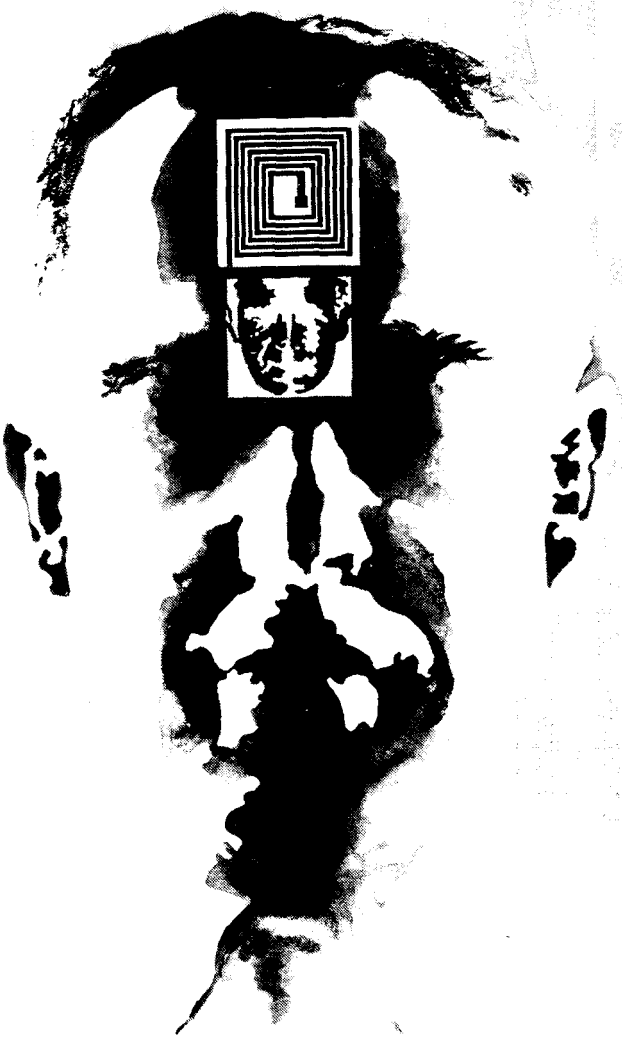

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said. One who specialized in the study of so-called 'primitive' magic rituals. Voodoo, hexes . . . love charms? "*You'll know you're in my thoughts*" . . . . Was it possible? Could I have been bewitched—?

Of course not. I groped for the tinderbox and lit an oxygen bright candle against the darkness ceremonially. What sort of throwback was I, anyway? It had been scientifically proven that pieces of hair and fingernail clippings had no magic properties. It was all in the mind of the beholder. *Meine Gedanken sind frei, damn it!* If I wasn't capable of getting into this grotesque situation entirely on my own, then I didn't deserve to be called a man . . . .

When the tardy autumn sunlight finally slopped over into the canyon, I made a thorough mental map of everything under the dome, inside and out, with ETHANAC's help. That turned out to be more complicated than I'd expected: the compound was literally a maze of round, stone huts, separated by a network of claustrophobic alleyways. What I'd taken by smell for a barnyard last night turned out to be the main courtyard, but liberally populated with unhousebroken chickens. At one end of it was the church, a striking three-story rectangle dominating the sea of round stone huts. Its walls were made of stone too, and protruding steel poles supported the upper storys, gleamingly out of place, like a helicopter among pterodactyls. I tripped over a chicken, remembering situational ethics. Well, God only knew where they'd find wooden poles on Mars, anyway. This sect must have been a progressive offshoot, to leave Earth in the first place. Thirteen years ago . . . just about the time Khorram Kabir disappeared from view. I wondered how much choice they'd had about leaving.

But nowhere did I see anything that looked remotely anachronistic enough to be the secret headquarters of a one man international empire. No telltale *haute cuisine* cooking among the pots of vegetable stew; no viewscreens among the murals of little winged feet, no indoor plumbing . . . unfortunately. If Khorram Kabir was actually a full-time resident here, then he really must be living the life of an ascetic recluse—and any of these robed, placid figures doing humble chores all around me might even be the richest man in the solar system. I took to peering at them, but I was damned if I could find Kabir anywhere among the white woolen robes and solemn faces. They tended to bless me.

On the way back to my hut after the evening prayers, I overheard three monks discussing the expected arrival of another guest, one whom I took to be a regular. And I swear I heard somebody say "helicopter."

But that was all I could understand of it, and I wasn't sure whether it meant anything at all. If it didn't, it left me totally without any idea of what to try tomorrow. Kabir *had* to be here, I knew that the Xanadu's computer wasn't lying. But damn it, he must be invisible! I thought about

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Hana, and the others, and how it looked like I might be going to let them down, after all . . . . And then I thought about Hana some more, and lay awake on my cot far into the night, troubled by some very impure thoughts.

Which proves that even vice has its virtues. Because if I hadn't been lying awake, I might never have picked up the almost imperceptible vibrations of . . . a helicopter landing? The quality of the vibration and my eavesdropping clicked together in my mind. I got up and peered out the doorway of my hut. It was close to the wall of the dome, and beyond it I saw—lights, landing lights echoing off the canyon wall, silhouetting the vaguely obscene form of a blunt, double rotored Martian 'copter. A helicopter is not a common sight on Mars even now, the air pressure being what it isn't; and getting one into and out of a canyon is no fun. Furthermore, there was a lone figure, in a pressure suit, walking this way . . . I decided that this was no ordinary visitor.

I struggled into my clothes and crept through the confusion of alleyways as quickly as possible, the monks not being believers in nightlights, either. I reached the main courtyard without breaking a leg, in time to see the person unknown cross it by candlelight, escorted by two monks. They went into the church, and didn't come out again. The church . . . the only building I hadn't been able to explore completely, because it was forbidden to the uninitiated . . . .

Which was undoubtedly the point. I felt a little miffed. And what about Kabir? Could it be that he was the midnight visitor? That this monastery was only one more false front, that he *only came here to pick up his mail*? And to consult his computer net: what else would he be doing sneaking into a monastery at this hour of the night? I was willing to set odds he hadn't come to pray for his sins . . . .

I huddled by the wall, waiting for him to finish his business so that I could finish mine . . . and waiting, and waiting. The monks must have had some kind of solar batteries feeding out some heat to keep them from freezing to death at night; I wished they'd been a little more charitable about the amount.

But at last my impatience was rewarded: the suited figure and his escorts, wrapped in flickering candleglow, drifted out of the church and on across the courtyard; but not toward the airlock. Apparently he still had his mail to read. I wondered whether I ought to obey my better instincts and go back to bed until he was safely gone. But on the other hand, it was only going to get colder, tonight; and who knew how long he planned to stay?

So I scurried across the courtyard, trailing dim shadows in the watery double moonlight. The roosting chickens paid no more attention to me than they had to Kabir; maybe they were comatose. I entered the church, and, safely inside, removed the finger-sized flashlight I'd secreted in ETHANAC's

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case. And just for good measure, I patted Hana's silver wristband: *Stay with me, Lady Luck.*

I switched on the flashlight and crossed the chapel where I'd prayed this evening, to the curtained doorway in the opposite wall. And hesitated, at the thought of committing possible sacrilege. The fact that the monks didn't seem to object to Kabir's use of their sacred areas didn't mean that they'd feel the same way about me. After all, as their benefactor, he probably had special dispensations; and as someone out to sabotage him, I probably didn't. But no one could deny that my motives were pure; and so my situational ethics were as justifiable as anyone's—

I pushed aside the hanging and stepped into the inner chamber. I shone the light around the room, over manuscripts on dusty tables, over intricately filigreed metal crosses and murals of saints and flat viewscreens on the walls . . . *flat viewscreens*? I pulled the light back.

And there it was. Against the rough surface of the far wall, a rectangular screen just waiting for a chance to speak; a small, neat keyboard console beneath it; a single chair—a computer port. Khorram Kabir's entire empire before me, unguarded and unsuspecting . . . . I stood for a moment limbering up my frozen fingers and letting my fantasies run wild. And then I sat down, and got to work.

The screen bathed the watching saints in an unnatural glow as I switched on the terminal. I plugged ETHANAC's jack into the console, and let him take me mentally by the hand on a journey into this incredible mechanical mind. He began to enter inconsistant data, to call up the system's data-checker and get a clearer idea of how the system itself functioned. I felt the data-checker emerge, and felt like a social climber getting his first invitation to the grand ball.

But there were still so many worlds within to conquer: This was probably the largest and most diverse computer net ever created—a veritable heaven of programs within programs like Chinese puzzles, hierarchies of programs, systems, files like a pantheon of strange gods. I wondered what it would feel like to really be a part of that network, to really understand even a fraction of it, and have that fraction become an integral part of myself . . . .

Not this time. I was here to locate a specific subsystem and poke holes in it, I couldn't afford to treat this like a busman's holiday. That could attract attention; and avoiding the attention of the system's gatekeeper routines was one of my main concerns. But ETHANAC's whole 'education' had been oriented toward committing just this sort of illegal break-in without tripping the alarms, and if anybody could get us past the electronic beartraps he could.

I sat feeling him sift and poke and discard and try again, probing for one tiny flaw, and then another; holes to let him through from one subroutine to another, getting a little further in, a

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little higher up each time. I thought of the Xanadu's outmoded system—getting into that had been as simple as opening a door; getting into this one was like cracking a safe. The process involved thousands of failures for every success, but ETHANAC could try, try again at a rate I physically couldn't comprehend. The subsentient analysis was a strange sensation, faster than thought—I could feel things happen without being aware of how, the way a tennis player hits a ball. Time became formless; the world outside seemed like molasses. It was almost a kind of meditation. . . . Zen and the Art of Computer Break-in.

And successfully breaking into this computer network would probably be the greatest achievement of my entire life, in a perverse sort of way: I'd discovered that by entering the system through this port, I'd chosen the most difficult approach of all. Because the computer itself must be here on Mars—maybe even right in this room. . . . There was no time lag whatsoever. If its mechanical parts were located on Earth, I'd have the advantage of only having to deal with its autonomic nervous system, its knee-jerk defense reflexes which weren't all that flexible. The time lag would effectively prevent the gatekeepers from getting in my way. But the situation was reversed, and that meant that ETHANAC had met the challenge of a lifetime. Even with only remote control defenses to protect it, no one had ever gotten into this system successfully from Earth. . . . I wondered whether ETHANAC had just ironically fulfilled the purpose intended by his creators.

This was not only the largest system we'd ever tackled; I was beginning to think it was the strangest system too. It was almost as if I'd programmed it myself . . . and that was no compliment. I'm the solar system's best at finding and correcting bugs, but I have absolutely no sense of programming style. I can't be bothered with it, I go straight for the machine language basics. Which means that once I've done something, anybody else has a hell of a time untangling my work. They say a camel is a horse put together by a committee—well, I'm a one-man committee; both a blessing and a curse, as my boss once told me . . . And so was the state of this machine's software. Maybe it had been a security measure: nothing was where it logically belonged, it was buried under piles of unrelated data. It was like creeping through the back rooms of some reclusive trash fetishist's castle, stacked to the ceiling with junk and old news printouts. And somehow I had to tunnel through it all to the control room, the castle keep, where he kept the supervisor programs that would let me manipulate to my heart's content.

And then, with a sudden rush of triumph, I realized my wish had been granted. Doctors bury their mistakes, and so do programmers, if they're lucky . . . but somebody's luck had just run out. I'd already passed up several obvious errors in the system, because they were just too obvious.

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But this time I'd found an inconsistency that was utterly inconsequential—and I could use its existence to draw out the supervisor's error-handling routines. They would drop the drawbridge for me, taking me for a Noble Programmer, and I would be *in——deep trouble.* Circuits closed, contacts were frozen, the guards moved in on me with swords drawn . . . I'd rung the bell. I'd walked straight into a security trap, and now I was—

Who are you? an incredulous voice demanded.

Going crazy? I shook my head like a stunned cat. *Did I hear—?*

You're trapped, Ethan Ring. You won't escape. I've been waiting for you . . . .

Voices. Now I knew how Joan of Arc felt.

Tell me who and what you are—

My first thought was that I'd inadvertently created another monster, brought this system to life, somehow, too. But I'd never heard *voices.* Even ETHANAC had only been semirational, for his first few hours . . . . "W-who are *you*?" I subvocalized the thought, feebly defiant.

I am Korram Kabir.

So that was it: A megalomaniac computer, believing it was its own creator . . . . *Or was it—?* Was it possible, could it really be true? Had this crazy-quilt system been sentient all along; had someone actually succeeded in achieving the impossible . . . turning a human mind, or personality, into software—?

Exactly, the self-satisfied voice in my head said; the feel of telepathic speech was like the irritating tickle that catches in your throat and won't let you cough.

So, at last I could put all those rumors to rest. Khorram Kabir wasn't senile, or dead. Oh, no—he was alive and well, and living in a computer. He had literally become a nonperson, he had retired from the world and cast off his mortal body in the most genuine sense. His mortal body . . . . If this was Khorram Kabir, then who was that stranger I'd seen tonight—?

As if on cue, a voice behind me said, "Well, Mr. Ring. What a pleasant surprise."

Turning my head at that point was the most difficult thing I'd ever done in my life. Because I already knew that strangled rabbit voice could only belong to one man . . . . I looked around at him.

For once in my life, why couldn't I have been wrong? Salad stood across the room, helmet in hand, his bald head gleaming like the deadly satisfaction in his eyes.

I leaped up out of the chair, trying to pull ETHANAC's jack free from the panel. But I couldn't get it loose, Kabir had locked it into the console. I stood there tugging at it, the boy at the dike with his finger stuck, "Come on, dammit, let go of me!"

Salad leered at me in silent appreciation, and then he pulled out the gun.

I froze, caught with my pants down and my hand in the cookie jar. "I know what this looks like, I know what you're thinking, but actually I was

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only, I mean I really—"

The gun spat once, inaudibly, and something hit my knee like an invisible ax. I collapsed into the seat with a cry of heartfelt agony, clutching my leg in disbelief.

"I'm so glad it was you, Mr. Ring," Salad said congenially. "After you betrayed our agreement. After you caused so much damage at the hotel. After you left without paying for any of it . . . " He broke into a smile that would have done justice to a homicidal maniac. "Well, now you're going to pay for it all, Mr. Ring. Because Mr. Kabir still wants to know who hired you. And I'm going to make you tell me who it was . . . But please don't tell me too soon; that spoils the fun. And besides, it won't do you a bit of good . . . " Any minute he was going to be drooling. He lifted the gun again.

"Oh, my God," I moaned, too dazed to think straight. "Oh, my God. Help me. Kabir, please, you don't want to feel him do this to me! Stop him, you can make him stop—!" I don't know where the inspiration came from, but it must have been heaven sent.

Because the screen in front of me lit up in ten centimeter letters, "SALAD, STOP."

"Look!" I babbled, patting the screen frantically. "Look, look—"

Salad lowered his gun, and his eyes widened fractionally. They narrowed again. "This is a trick. You tampered . . . "

"It's no trick!" It's hard to shout through clenched teeth.

"Salad." new lettering, smaller, "this is Kabir." A code sequence printed out. "I want to question this man myself, in my own way. You will not touch him unless I give the order. Understood?"

"But you said—" Salad lowered the gun all the way, looking incredulous. "Understood, sir. I didn't know you could—hear, sir."

"There are a lot of things you don't know about me, Salad," the screen said. "And you never will."

Including the fact that Kabir was reading my mind . . . . *So you throw yourself on my mercy, Ethan Ring*? his electronic telepathy formed words in my mind at the speed of thought; the screen went blank.

Yes, Mr. Kabir, I thought dutifully. *Thank you, sir.* If my voice could have shaken, it would have.

It's a long time since I've—felt pain, Ring. I had forgotten how much I disliked it . . . .

You're not the only one. I glanced down at my soggy pant leg, and wondered if he wanted to remember how it felt to be violently ill. *ETHANAC, help me out—* I felt a slight buzz begin inside my head as he damped out the pain receptors. *Whew . . .* my mind began to clear, *that's got it.*

And we're back to my first question, which you still haven't answered, Ring: Who are you, and what are you? Are you man, or machine? I've never had contact with something like you before. I didn't know such a creature even existed.

The feel of the conscious thought, I realized, was Arabic. I switched into it

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ingratiatingly. *It's mutual, sir. And I'm both. A man sitting at your terminal, a machine plugged into it: a mind made up of both.* I made my three color analogy for him.

A true symbiosis! How did it happen? Who made you what you are? Tell me about yourself— I felt a peculiarly poignant eagerness fill my mind.

It all started about a year ago . . . . And for the second time in a couple of days I found myself taking a trip down memory lane, at the behest of an offer I couldn't refuse . . . . *And I came to Mars as a crate of bologna. I've worked here in the Arab territories about a year, doing software maintenance.*

Naturally. I swear there was a chuckle. *Now, tell me how you came to be in your present fix—*

I jammed the memory with a burst of static, before he could read too much. *Sorry. That's classified.*

I can make you tell me. Or Salad can—

Oh, no— I glanced at Salad, waiting there like a vulture, complete with shiny skull; my panic rose again.

Don't panic, Ring. You're much too interesting to me for me to waste you on such an inconsequential matter. Particularly since you've failed at whatever it was you were trying to do to me.

Relief and then dismay replaced my incipient horror. I had failed, ETHANAC had failed, this system had been too smart for us. I wondered whether ETHANAC would have won, if he'd been joined to the superior human mind that should have been his partner . . . . It left me feeling oddly dizzy and drained. Something warm and wet was collecting down inside my right boot. *Thanks, I think.*

You fascinate me, Ring. And you fill me with envy.

I do?

Yes. There are some things even I can't control. You have the five things I can never buy, with all my wealth—the five human senses. I can't really see you, or anything else. I can't hear or touch or taste or smell. And I can't go back . . . my body is dead and buried. This is the closest I've come—this brief sharing of your own senses—to the outside world in thirteen years. Allah, you don't know how much it means to me to have discovered that you exist! And you're the only one?

The only one I know of. I was surprised at the emotion that filled me then, especially that it was all my own. I realized how well ETHANAC understood what he was saying.

As I am the only one. The only Khorram Kabir; the man who may live forever. I control an empire . . . but I can't touch it. I can't see my beloved Xanadu—

Then, why? Why did you . . . do this to yourself? Everyone believes you wanted to get away from all that, that you didn't want anything to do with the world any more.

I was sick, my health was going. But I didn't want to lose control. I became a 'recluse' to set the stage for

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this transformation—and it was successful. Only Khorram Kabir could control the resources to achieve what I have become . . . And now that I have it, I'll never give it up, I'll keep control of my empire in a way that no ruler before me ever managed to do!

I fought down the overwhelming flood of raw ambition that tried to swallow me then, the way it had already swallowed a sixth of the people on Earth—*But you'll never see it rain again, or drink the Milk of Paradise, or touch and be touched by a beautiful woman* . . . I felt the force break and drain away, leaving me weak. I put my hand over my wrist and slumped back in the chair. *Oh, Hana, think of poor Ethan tonight . . .* I remembered Kabir's presence in my mind, like a voyeur, and tried to control myself. For some reason it was getting hard to keep my mind on the subject, whatever it was . . . *was it Hana—?*

Hana . . . Kabir's emotion backed up into my own again, making it suddenly so unbearable that I almost cried . . . or he did. I'd fed emotions into a computer before, but I'd never had them come back at me like this, until I couldn't tell them from my own. I couldn't tell them from my own.

And all at once he wasn't the master of the world playing blind man's bluff inside my head any more. He was just a lonely old man shut away in an institution, trying desperately to keep in touch with life. And suddenly I felt very sorry for him, and it was easy to let him see Hana as I'd first seen her, in the black light glow of the underworld, and in the Peacock Lounge at the Xanadu. And to remember eating and drinking and sharing the rain . . . . *rain, rain, go away . . . come again some other day . . . .*

Ring! Are you all right?

Huh? I found myself lying face down across the keyboard, trying to remember how it had happened. *Oh . . . sorry.* I pushed myself up with rubber arms, and flopped back in the seat again.

What's the matter with you? It was somewhere between indignant and appalled.

My lower leg was soaking wet. *I think . . . I've sprung a leak.* Which for some reason struck me so funny that I started to laugh. *It's not funny! It's not funny!* And suddenly it wasn't, and the idea of being forced to sit here and reminisce until I bled to death made me feel very cold and frightened.

Forgive me, Ring. I didn't realize . . . I didn't mean for this to happen. This has meant so much to me—

Poor man, I thought thickly. *Poor Khorram Kabir, you poor bastard, you only want what I wanted . . . what we all want . . . freedom, that's all they want; the right to lead their own lives . . . touch each other . . . watch it rain . . . . But you won't let them have what they want . . . and you can't have it either, so what's the point, you poor bastard? How it must hurt to live with so much sadness . . . .* I touched the screen's blind eye maudlinly, leaving a red spot; overwhelmed by misery and regret and not

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sure who it belonged to.

Stop it, Ring! For God's sake— It was like a slap in the face.

I jerked awake again, and took a deep breath.

What is it you want of me? Why did you come here?

A keyhole, I thought, *I want to plant a lousy keyhole in your system for somebody,* managing not to remember who. *Some people who want to be free.*

All right, then. Do it.

What?

Do it. I won't stop you.

Was I really hearing that? *Why?*

Because you had pity on me, Ring . . . . Everyone feels sorry for the people a tyrant oppresses. But very few feel sorry for the way he oppresses himself. You feel sorry for us all . . . and for that I am in your debt. You almost make me feel that such nobility of purpose deserves to be rewarded— He drew back, like a snapping turtle pulling back into its shell. *But I'm still a businessman, Ring. So I'll make you a deal. You're the only man in the solar system who can give me what I really want. I want to be able to see through your eyes, and I want to find out what kind of man you really are. The keyhole will remain open as long as you come here, once a month, and let me do that.*

I kept my attention focused on the words with a supreme effort of will. *It's a deal! I'll come back; if I ever . . . . get out of here alive, that is—*

I'll see that you do. Plant your keyhole. I won't stop you.

The system called off its guards, raised its hands, dropped its drawbridges . . . ETHANAC made the changes in less time than it took to think about it. *So simple . . .*

Good-bye, then, Ring. Or au revoir. *Take care of yourself—you belong to me.* A ghost of a chuckle, and then there was no one in my mind but me.

"SALAD," appeared on the screen again, and the most beautiful words I'd ever seen: "Get Mr. Ring to the hospital immediately."

Salad pushed away from the manuscript table where he'd been perched patiently, and stared at the message, and at me: The chief executioner, who'd just been told the king had outlawed capital punishment. "Yes, Mr. Kabir—"

" 'Curfew shall not ring tonight,' Salad." I grinned a sickly imitation of bravado. It took all the strength I had to pull ETHANAC's jack loose from the panel; even though no one was stopping me, this time. I switched off the terminal, leaving us in sudden darkness.

Salad produced a flashlight before I could find my own, thoughtfully turned it on me as I pulled myself up out of my seat . . . . the sort of light they shine into your eyes when they're giving you the third degree. My boot squelched nauseatingly when I put my weight on the injured leg, and the pain level shot up. ETHANAC blanked it out again obligingly, but I wondered whether I was going to do any permanent damage. My head felt like a teth-

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ered balloon. "Give me a hand, Salad. I think you've disqualified me from the standing broad jump."

He crossed the room, still using the flashlight to maximum bad effect, and held out his hand. I reached out, took it, and shifted my weight. Salad released his grip with a slight jerk, and let me fall flat on my face.

I slowly untangled myself in the pool of light, and squinted up at him. I couldn't see his expression, which may have been just as well.

"Oh. Sorry, Mr. Ring . . . but I'm afraid I can't help you."

"What do you mean—?" That didn't come out sounding the way I'd intended it to. "Kabir . . . ordered you to help me, damn it!"

"No, Mr. Ring," he said gently. "He told me to take you to the hospital. And I will, if you can get to my 'copter unaided. You see, he also told me not to touch you, unless he said it was all right. And he never did."

"You know that's . . . what he meant!"

"I always obey his orders explicitly. To the letter. That's why he trusts me." The darkness grinned mockingly.

"He's not going to . . . trust you if I'm . . . not here again in a month. He wants to see me—" I tried to get up, without much luck.

"Pathetic, Mr. Ring."

"It's true! Call him . . . ask him . . ."

"You're wasting time, Mr. Ring. Every minute you sit there objecting you bleed a little more."

It finally sank through my thickening head that that was the whole point of the game. I began to understand the horror behind the term 'cat and mouse.' I got all the way to my feet this time, using fury as a crutch, and made it past the curtained doorway, through the prayer chapel, to the church entrance.

The distance across the moonlit courtyard to the dome's airlock seemed to stretch like a topologist's nightmare: 50 meters . . . 500 . . . 5000. I kept getting lost; or maybe it only seemed that way. There wasn't a sign of another human being now—and that included what followed me, holding a flashlight. I didn't suppose it would do any good to shout for help, even in Ge'ez, under the circumstances. *God helps those who help themselves.*

But we reached the airlock at last, my shadow and I. I was still in the spotlight; too preoccupied now to be embarrassed by the humiliating loss of privacy. And the light reminded me, inadvertently, that I wasn't wearing an O_2 breather: The monks were an orderly order, and theirs gleamed like a row of little angels beside the airlock's inner door. I stole one without the slightest regret. I turned the wheel on the airlock door, gasping like a fish out of water, and with the last of my strength gave Salad the finger as we stepped inside.

But as the lock cycled, I realized that even my determination to beat him at his own game wasn't going to be enough. I was disassociating, com-

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ing apart . . . a dust storm was rising inside my head . . . red dust . . . . The outer door swung open, and the incredible cold of the Martian night hit me like a fist. *ETHANAC! I'm goin' under—catch me. . . .*

IT'S ALL RIGHT, MICHAEL. LET GO: I HAVE YOU . . . . NO COLD. NO PAIN. DROPPING CIRCULATION TO MAINTENANCE IN UPPER BODY: REDIRECT OXYGEN TO MOBILE LIMBS. SQUINT YOUR EYES. STEP FORWARD, THROUGH THE DOOR. STEP HIGHER! BALANCE. STEP AGAIN . . . AGAIN . . . VEHICLE TO THE LEFT. STEADY . . . COMPENSATE. MOVE YOUR FEET. WATCH SALAD—DON'T LET HIM TRIP YOU. KEEP BREATHING! WAIT: TWO VEHICLES. TWO? WHICH ONE—? "Salad . . . which one!" BUT HE CAN'T HEAR ME. WAIT FOR HIM. WAIT. HE'LL USE THE LIGHT—HANG ON, MICHAEL.

MORE LIGHT: FIGURES, TWO, COMING TOWARD ME. WHO—? NO, DON'T FALL DOWN! BRACE YOUR LEGS. MOVE YOUR FEET. HAVE TO GET PAST THEM. HAVE TO—

"Ring! Is that you, Ring?"

"Salad, drop it! I've got you covered. Drop it!"

VOICES: NTEBE, KRAUS . . . . HOW—? NO, CAN'T STOP, NOT YET. NOT YET . . . . ALMOST SAFE.

"Ring, old man! You're all right!" VOICE: NTEBE. "We were afraid we'd come too late—"

"What did you do to him, Salad? What's the matter with him?" VOICE: KRAUS.

" 'Copter . . . get to the 'copter."

"I have no idea, gentlemen. I caught him threatening Mr. Kabir. That's an illegal act. You're aiding a criminal. That's illegal, too." VOICE: SALAD.

"That's a matter of opinion." VOICE: KRAUS.

" 'Copter . . . let go of me—" PANT LEG FROZEN STIFF. LEG NOT RESPONDING. DON'T FALL. DON'T FALL—

"Oops! Hang on, Ring, I've got you." VOICE: NTEBE. HANDS, ARMS, SUPPORT— "Hana's waiting with the 'copter. We'll get you out of here. Come on, Kraus."

"I've got both these guns on you, Salad. Don't try anything stupid." VOICE: TWO-GUN KRAUS.

"For pity's sake, Kraus, will you come on! Give me a hand here, he's a dead weight." VOICE: NTEBE.

"More than you know, hopefully." VOICE: SALAD. "He's failed, you've all failed. FTI will regret this—"

"Having a good law firm means never having to say you're sorry." VOICE: NTEBE. "Good-bye, Salad. Don't think it's been fun."

MORE HANDS. HELICOPTER COMING UP: GOOD, YES . . . . GOOD HANDS. GOOD GUYS. GOOD RIDDANCE, SALAD—

"Ethan. Ethan—" VOICE: TAKHASHI. "Hurry up—watch his head, Basil!" DOOR SEALING. SAFE NOW. RELAX . . . . "What's wrong with him, what happened? I *knew* it, I knew something was wrong . . . . No, you pressurize, get us up out of here, Basil. Watch out for the downdrafts. Ethan's mine, leave him to me . . . . God, he's cold as a witch's tit; turn up the heat, too. And get out the first aid kit, Cephas, we'll—we'll need bandages, when he thaws out . . . . Ethan, can

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you hear me? Can you hear me?"

WARM ARMS TIGHTENING . . . NICE. CABIN PRESSURIZED—BREATHE DEEP, MICHAEL. "No."

"No?" VOICE: TAKHASHI. "Yarrow . . ."

"No."

"ETH—ETHANAC?" VOICE: TAKHASHI.

"Yes."

"My God, he's on autopilot." VOICE: NTEBE.

"Are they—coming back, ETHANAC? They are all right—" VOICE: TAKHASHI. UNSTEADY.

BLOOD OXYGEN RISING. RESTORE CIRCULATION. INTERFERENCE . . . long tunnels . . . *help . . . hell . . . hello? Where's my body . . .*

WELCOME BACK, MICHAEL, EVERY*thing's just where it ought to be*

Breathing pure oxygen under normal pressure was as good as a transfusion. "Brr. H-hold me tight . . . and we will be, Lady Luck," I mumbled, clutching my oxygen mask.

"Are you sure that's the computer?" Ntebe leaned across my legs and peered at me. Beyond him I could see Orion dressed in his starry Sunday best, peeking in through the heavy window glass. I couldn't quite grin at him.

"Doesn't matter . . . we all . . . feel the same way about it." I blinked; the frost was melting off my eyelashes and into my eyes. "You've got your keyhole, Ntebe. Salad . . . lost every bet, tonight."

"Wonderful!" But he glanced down at my leg, and his face turned grimly glum. "And you lost over a liter of blood. . . ."

"Look on . . . the bright side. I'm still half full."

"We did it, then. We actually did it!" Kraus chortled at the controls. "We foiled two of the greatest villains in the solar system! That's an adventure too—"

"Basil," Hana said, blowing gently on my frozen fingers, "shut up."

The rest was silence.

"I'll never play the violin again, you know." I leaned on my cane at the solarium window, watching black smoke from the factory next to the hospital mushroom into the smog-brown polar air.

"You play with your feet?" Hana said.

I turned back thoughtfully. "You mean there's some other way?"

Kraus groaned.

"Who's the patient here, Kraus, you or me? I'm the only one who's supposed to be in pain." I hobbled across to join Hana at one end of the determinedly cheerful red plastic couch.

"A pain in the neck," Kraus grinned at me good-naturedly, from the other end of it.

"Speaking of which, we're still waiting for Salad's legal ax to fall, on FTI, or at least on us. Somehow I don't think he'll have the nerve to try it—" Ntebe raised his eyebrows. Across the room one of the other patients shouted, "Gin!" and tossed down cards. For some reason, none of them

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would play with me any more.

"If anybody gets the ax, it'll be the headsman," I said. "And I'm looking forward to delivering the *coup de grace* . . . I don't think Khorram Kabir will be amused at what happened to me after his lights went out."

Hana put a comforting arm around my shoulders. "Khorram Kabir . . . is software. I still can't believe it. It's too incredible."

"Money can buy you anything, if you've got enough of it. Well, maybe not anything . . ." I shook my head.

"About your—deal with him, Ring." Ntebe looked back at me, hesitated. "I don't feel I have the right to ask this of you, after what you've done for us already, But if you could pay him those—visits—for even a few months . . . ."

"I plan to keep my appointments." I patted ETHANAC, nodding. "I'm not about to let all that trouble go for nothing. And besides, I want to do it. Because I understand what it means, not to be —" I glanced down at the dusty plastic plant in a pot beside me, remembering. *You belong to me, Ring* . . . . for a minute, I wondered just exactly what Kabir had had in mind when he'd chuckled at that. But, on the other hand— "Besides, how many people get to play the Ghost of Christmas Past to the biggest Scrooge in the system? I may melt his mechanical heart yet."

Ntebe brightened. "Maybe you've got something there."

"I hope it's catching."

"My fireship." Hana kissed me on the cheek.

"Please," I said, reddening. "Do that again."

"Well. Yes." Ntebe stood up, clearing his throat. "Come along, Basil. Let's get ourselves a cup of tea, or something, shall we?"

"What? . . . Oh." Kraus stood up with him. "Oh." They went away quietly.

"So tell me," I held out my wrist, when we were alone at last. "What about this silver bracelet, anyway?"

She drew back. "What about it?"

"How did you know I needed you?"

She laughed. "It's a tracer. And anyway, I kept track of Salad. He followed you . . . we followed him."

"But how did you know I needed you *then*?"

The smile turned sly. "You don't really want me to tell you the truth, do you?"

I thought about that.

"I didn't think so." She touched my wrist tenderly, and glanced away.

I leaned back, letting her beautiful face fill my eyes, and said in sudden earnest, "Do I want you to predict the future—?"

She looked back at me clinically. "Well, speaking strictly as a doctor, I foresee your needing an extended period of bed rest, and some very special treatment—"

"You're not that kind of doctor!"

"It's not that kind of treatment."

Nevertheless, it worked like a charm. ■

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science fiction is too GLOOMY

JOHN GRIBBIN

We'll have problems galore in the 21st Century—but not the problems foreseen in "the standard SF nightmare!"

About two decades ago, at a very impressionable age, I read an article in *Astounding* developing the theme that "Science Fiction is too Conservative." The basis for this assertion was provided by a series of exponentially rising growth curves, something like the example of Figure 1, which were projected to indicate truly remarkable improvements in, say, human longevity, wealth of individual citizens and speed of travel by public transport systems by the 1980s. The valid lesson drawn from these curves (valid in the 1950s, that is) was that whereas even the imaginative SF writer projects his future world only by taking an upward tangent from the growth curve into the future (dashed line in Figure 1), the ever-increasing rate of "progress" makes these wild leaps of imagination commonplace at an ever-increasing rate.

Up to a point the growth curves continued to keep ahead of the "too conservative" imaginings of SF into the 1970s. The classic example is Arthur Clarke's visionary forecast of the potential for global communications of satellites in geostationary orbits, which he made in the 1940s but never then expected to see in his lifetime; the tiny number of even 1950s stories that set the first Moon landing in the 1960s is another, rendered even more dramatic by the failure of *anyone* to imagine that, with the aid of

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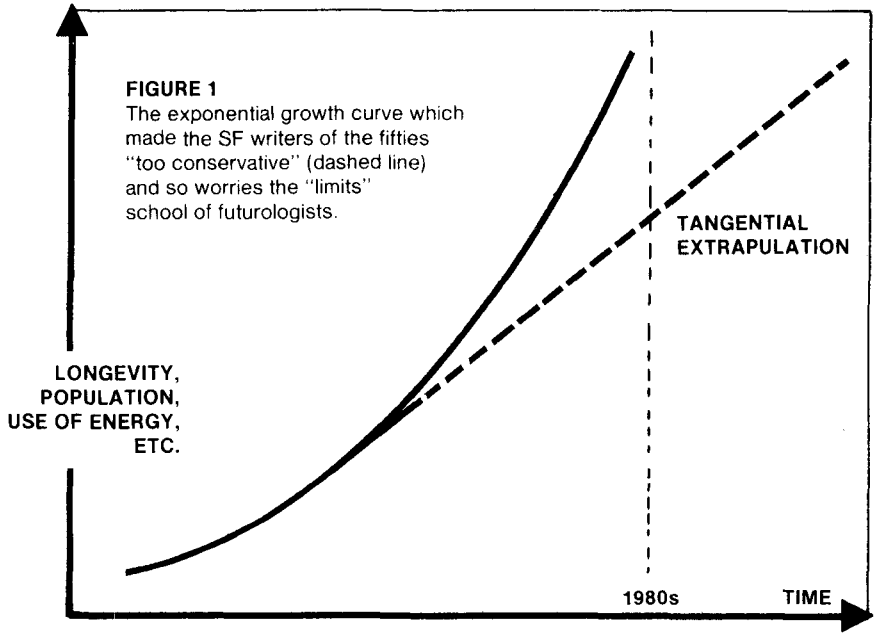

FIGURE 1
The exponential growth curve which made the SF writers of the fifties "too conservative" (dashed line) and so worries the "limits" school of futurologists.

those communications satellites, the first Moon landing would be shown live, on TV, worldwide!

But the euphoria of the early Apollo program coincided with the popularization of another, more gloomy look at the nature of exponentially rising growth curves. Perhaps boosted by the image of the Earth, viewed from the Moon, as a small and lonely planet, the "Limits to Growth" argument caught on like wildfire. Now, to many people growth curves exactly similar to Figure 1 are seen as harbingers of doom, implying that in the near future human population will be increasing so rapidly that the limited resources of Planet Earth will be sucked dry, as demand for energy, food and raw materials also goes through the roof and off the top of the graph paper. This is incompatible with the view of the optimist—taken to absurd limits, putting all the growth curves together implies infinite longevity, infinite wealth, instantaneous travel in space and infinite population density. Clearly something has to give, and according to the extreme pessimists of the "limits" school the natural sequel to the boom is a bust, with exponential growth followed by exponential collapse, so that the years we have just lived through will be in retrospect the brief golden years of technological civilization. The panic reaction to such a prospect is to try to freeze things as they are, screw the lid down on the pot and avoid any more growth, now regarded as the evil precursor of

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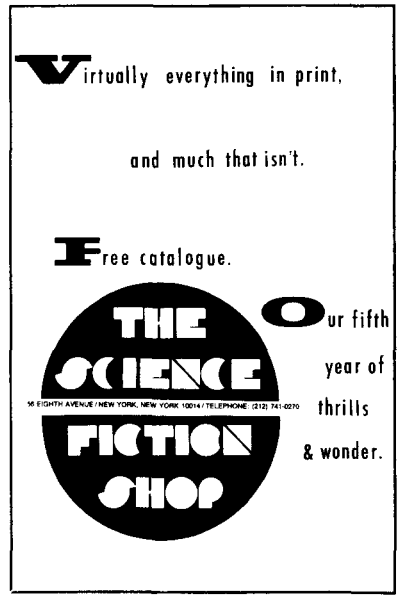
doom But the pessimists are, if anything, even further removed from reality than those too conservative SF writers of the fifties.

The curves have more surprises in store there is another way out of an exponential growth regime that is found in nature, notably in the population growth of many animals that enter a new and favorable environment, including rabbits in Australia and European settlers in America. Exponential growth at first, but this eventually slows and levels off at a figure appropriate to the changed situation On this picture, human society began to experience such a convulsion with the industrial revolution in Europe, the effects of which are now rapidly spreading worldwide. Population exploded because the system of natural checks and balances—famine, disease and so on -was altered by the new abilities humankind had developed, including the ability to grow more food and increase agricultural productivity. In a nutshell, population increases to consume the food available The result is the "S" shaped curve of Figure 2, where some numbers have been put in to indicate the situation with regard to population as a specific example. The past few years have indicated the beginning of a slowdown in the rate of growth of world population, which puts us exactly on the turning point in the curve—the point of inflection—and makes it possible to estimate the level at which things will level off in the next century. All the other curves which the doomsters extrapolate wildly to indicate that the end of the world is at hand are modified as a result of this change, with the Earth now seen as well able to support in reasonable comfort the expected population of the foreseeable future, and all "wild card" possibilities such as O'Neill's Lagrangian Habitats, or mining the asteroid belt, as potential bonuses from which to build beyond a level of "reasonable comfort."

All of this, of course, has dramatic implications for the way we view the future, and changes the priorities we should assign to some of the problems that keep hitting the headlines. The period we are living through is still seen as unique, but now as a unique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period of change during which many problems are getting turned on their heads. What we worry about in the short-term—the next twenty or thirty years—is in many cases *reversed* with a slightly longer-term perspective, beyond the middle of the 21st century.

This shift from growth to a stable population has already been seen in the developed countries of Europe, North America and Japan, which gives us confidence that the same kind of "demographic transition" really will apply to the world as a whole. Looking at the examples of individual nations, it is clear that the transition occurs once people reach a standard of living with sufficient security that the pressure to have many children as an insurance against poverty in old age is removed. It's an old argument, which has been refined and debated by the economists but still stands up. So, far from more *economic* growth being the harbinger of doom, it is absolutely essential to have growth in economic terms to reduce the desperate poverty of the Third World and to power the vital demographic transition. The only way the collapse feared by the doomsters will actually come about is if they succeed in screwing down the lid and upset the natural progress of events toward a stable situation.

Of course, the growing awareness of the need to avoid despoiling the environment and concern for a better quality of life remain valid. The argument that growth is essential doesn't rule out the possibility of a more controlled growth than in the past, with more concern for both people and things. But there really is ample scope for the necessary growth even with these constraints. In agriculture, it is now widely accepted by the specialists, aided by satellite monitoring of the fertile zones of the Earth, that we could feed double the present global population with just the widespread application of the "best" present day farming practices. Again, any new developments in fertilizers, high yield strains or whatever would be a bonus on top of this existing capacity. The fact that people do starve in the world even today is not a sign that the world is overpopulated, but rather an indictment of the present inadequate systems for the supply and distribution of food on a global basis—or, put another way, it is a growing pain associated with the present period of rapid transition from one stable level to another.

The changing situation has its impact on the energy problem, too. In the developed countries, estimates of future demand for electricity are revised every year—and almost always they are revised downwards. With a stable population there are only so many things electricity can be used for, and once every home has a couple of TVs, freezer, washing machine and so on domestic demand levels off. Conditioned by the years of exponential growth, power authorities frantically plan more and more capacity which is unlikely to be used fully in our lifetimes. The true picture offers

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scope for a much more calm approach to any problems that are foreseen, with time to wait and see before, for example, rushing into construction of large numbers of nuclear reactors. Our parents have suffered to some extent from the "future shock" of very rapid change in society; as we move toward the end of the 20th century we are beginning to suffer future shock from the opposite effect, a slowing down in the growth that we have come to take for granted. The results will change society as dramatically as the effects of growth did, as we move into what has been called the "postindustrial" society.

Perhaps a key example of old ideas coloring our picture of current events is provided by the unemployment "problem." In any sensible society, surely it should be highly desirable to remove as many people as possible from the dangers of working in coal mines, or from the boredom of repetitive work on production lines? The fact that so many nonproductive workers can be supported indicates the *strength* of the economy and its decreasing reliance on men as beasts of burden. Herman Kahn estimates that by the year 2000 only one-quarter of the U.S. work force will be employed directly in productive industry, while the rest work in service industries (education, health and so on) or in areas where the work is done simply because it is considered a "good thing" (such as the arts, or fundamen-

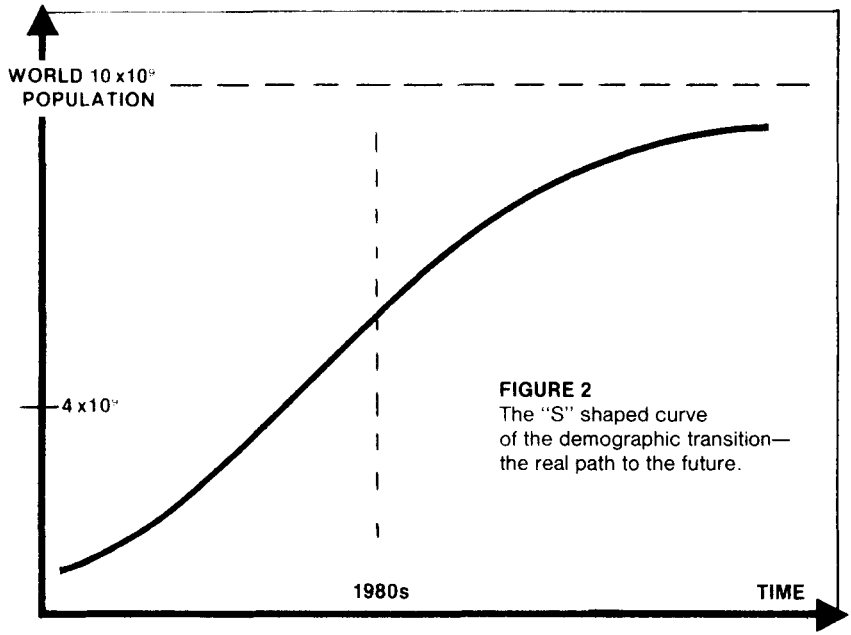

FIGURE 2
The "S" shaped curve of the demographic transition—the real path to the future.

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tal scientific research). It is hard to draw the line between much of this "work" (the growth of numbers working in government, say) and straightforward welfare payments. Both become simply ways of transferring the wealth of the country as a whole to individuals.

Such a future world could be a pleasant one to live in if we adapt to the changing situation. If not, the unpleasant possibilities spelled out in Vonnegut's *Player Piano* (one SF book which definitely was not "too conservative" and which is now cited by many respectable economists and futurologists!) could become a reality. The problem is not unemployment, but that society educates people to expect work, and to feel guilty if they do not work, while those who are working look down upon the unemployed. Automation is already taking over almost completely even in the production of cars; the unemployed don't have a "right to work" but they do have a right to a decent life, so what are they to do? One intriguing possibility is now just beginning to be discussed—in essence, a "self-service" world.

A few daring economists now make a different kind of extrapolation, which they then combine with the picture of stability and low employment. Already there is a growth in the extent to which many people in the developed countries contribute some of their own work toward the construction or preparation of things they use. Hi-fi's, even home computers, and furniture are obvious examples of this; less obvious but equally valid is the example of the gourmet who cooks his own meal instead of eating at a restaurant. As production gets more efficient—with less people in employment in industry and goods getting cheaper—it is possible to "do it yourself" on an increasing scale. Groups of people already get together to build their own houses; how about building your own car from a kit? Certainly rather different from the old image of "housework," and with enough variations on the theme to keep almost anyone happily "productive" in their own right. Economist Jay Gershuny has put it neatly: "the household in the self-service economy is the king-pin of production and consumption."

So we have a rather different picture of the future world from the one favored by the new Luddites of some so-called "ecology" movements. Growth is neither a bad thing in itself nor running away in uncontrolled fashion, but rather carrying us through a difficult transition period into a new kind of world. Planet Earth is not overpopulated but has ample capacity to feed the ten-thousand million population that we are moving toward; oil may be in short supply, but there are vast reserves of coal around, and we haven't begun to really tap other sources such as solar and geothermal power; as for material reserves, one cubic kilometer of the Earth's crust contains 210 million tons

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log

A Calendar of Upcoming Events

4-6 December
ACM 78 (Association for Computing Machinery) meeting at Washington, D.C. Info: ACM Headquarters, 1133 Avenue of the Americas, New York, NY 10036.

16-17 December
Science Fiction Space Fantasy (National Star Wars Association) at Taft Hotel, New York, N.Y. Registration $10/day until 15 November. NO At-door sales. Registration limited to 1500. Specify day when ordering tickets. Info: National Star Wars Association, P.O. Box Q, Stony Brook, NY 11790.

27-29 December
Symposium on Biomaterials in Dentistry and Medicine at Los Angeles, CA. Info: W. H. Hildemann, Dental Res. Inst., Center for Health Sciences, Univ. of California, Los Angeles CA 90024.

23-27 August 1979
SEACON 79 (37th World Science Fiction Convention) at Metropole Hotel, Brighton, U.K. American Guest of Honor—Fritz Leiber; British Guest of Honor—Brian Aldiss; Fan Guest of Honor—Harry Bell; Toastmaster—Bob Shaw. Registration $7.50 (supporting) to 31 December 1978, $15 (attending) to 31 December 1978. Info: Seacon '79, 14 Henrietta St., London WC2E 8QJ, U.K. This is the science fiction world's annual get-together. Professionals and readers from all over the world will be in attendance. Talks, panels, films, fancy dress competition, banquet, the works. Join now and get to nominate and vote for the Hugo awards and the John W. Campbell Award for Best New Writer.

ANTHONY R. LEWIS

Items for the Calendar should be sent to the Editorial Offices, ***four months*** *in advance of the issue in which you want the item to appear.*

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of aluminum, 150 million tons of iron, 150,000 tons of chromium, 7,000 tons of uranium, 80,000 tons of copper, and much more besides. Unemployment, generally regarded as a problem in the industrialized world, is really a forerunner of postindustrial society in which people are released from the burden of labor which has carried us through the transition. The problems we have to face up to in the 21st century are not the problems of runaway growth, or of the collapse of society, but of a *natural* end to population growth and adjustment to life on a new plateau after the heady excitement of scaling a steep climb. And we should be ready, too, for many of the problems we see now in the physical world to be turned upside down a century or more from now, along with the problems of society.

Quite rightly, many people today are concerned about a slight cooling trend in global climate, which is bringing with it more extreme variations in the weather, as recent freezes, droughts and floods in the continental U.S. have highlighted. This is a natural trend, likely to persist to the end of this century. But, after that a counter trend may begin to dominate, the "greenhouse effect" of carbon dioxide released into the atmosphere through man's activities, warming the world and shifting rainfall belts once again. That has interesting implications, with perhaps a better climate for agriculture in the now hungry regions of the Third World coinciding with a rise in sea level which would have most serious effects on the coastal regions of the present-day, rich, developed countries! We worry today about the prospects of all out nuclear war; yet if we survive for a few more decades without blowing ourselves to pieces the problem will become one of adjusting to a world in which peace (détente, call it what you will) has become normal and there is no longer any purpose in a massive armaments industry utilizing so much of our productive capacity. Will that speed the development of the postindustrial society? Or give a huge impetus to space exploration? Or both—where better to build the new society than on new worlds? We worry about the limited resources of our planet, when it is more likely that we will be tapping the vastly greater resources of our solar system. And so on. The "good times" really may be just around the corner of the "S" shaped curve of the demographic transition, but watch out for the changes in emphasis and direction which may make it seem like a mental roller coaster ride. ■

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STILL I PERSIST IN WONDERING, Edgar Pangborn, Dell

THE BEST SF OF THE YEAR # 7, ed. Terry Carr. Del Rey, 365 pp., $1.95

THE VISIBLE MAN, Gardner Dozois, Berkley, 312 pp., $1.75

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SF & FANTASY PSEUDONYMS, Barry McGhan, Misfit Press, 70 pp., $1.50

In a recent letter to *Galaxy* magazine, noted and talented SF writer Christopher Priest complains, "In recent years there has been what I see as a deplorable trend in SF criticism towards the subjective response. Spider Robinson used to do it in *Galaxy* (and is still doing it elsewhere), and now so is Paul Walker. The approach is to find an *honest* but subjective response to the book in question, then justify the response in *honest* but subjective terms. In fact, the total process amounts to intellectual dishonesty ... at least in a review column the reader (and the author of the book) knows more or less how much importance to attribute to what is said, but such writing is worthless as criticism and we are all the poorer for it." (All italics and parentheses are Priest's.)

This seems to call for some response, not by way of riposte—for I am not offended by Priest's words—but by way of rebuttal, for I disagree with them strongly. One out of every dozen or so people who write me letters echo Priest's sentiments, more or less, and that is a high enough percentage to rattle me.

What is the content of mathematics?

That's a trick question I read first in Heinlein's *Rocket Ship Galileo*, (the first book I ever read) and heard subsequently from the better third of my math teachers (the others, if they knew the gag, preferred not to think about it). The trick answer is the truth: mathematics has *no* content. Zero. Nada. Math is pure form, a collection of systems which have *so far* proven very useful in describing certain aspects of "reality." There are maths, useful ones, in which 1 plus 1 does not equal 2 (or even 10), and there are circumstances in which "a whole bunch" is a more accurate description than "16"—say, in describing how many motorcycle thugs worked you over in 1969.

What is the content of criticism?

My schooling includes six and a half

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undergraduate years out of seven (again, a whole bunch) as an English major. During those years I was bombarded with objective standards of criticism, and I swiftly came to realize that there were nearly as many standards as there were English teachers. Even more swiftly I discovered that of those latter, there were many with which *I* disagreed. And it became clear that some of my own strongest preferences in literature—readability, interest, the illumination of a moral dilemma, humor, warmth, compassion—were not shared by more than a minority of my teachers.

Those of you non-English majors who believe that there are now or have ever been objective standards of literature, of any type, have been bamboozled, for any standard I know which cannot be contradicted by a dozen offhand examples turns out to be a circumlocution for "well done," which is to say, "enjoyed," and that last word cannot be defined other than subjectively. (If you remain unconvinced, pick up a copy of Frederick Crewes's hilarious *The Pooh Perplex*, in which fictional exponents of several great schools of criticism soberly "explain" the Winnie-the-Pooh stories.)

I therefore maintain that the phrase "worthless as criticism" is very nearly redundant. Criticism seems valid to me only when it offers insight into work already proven significant by history; that is, when it does not pretend to objectivity.

I am generally tolerant of literary critics, even objective ones, as I am of gnostic prophets—even when they demand that others swear loyalty to their own pet belief-system. When I become exercised is when a significant number of others show signs of *doing* so. If there is such a thing as objective truth (and if it can validly be applied to art) surely science fiction is the *last* place it belongs.

I therefore wish to make it quite clear that the opinions expressed herein are strictly that. Occasionally I attempt to codify my subjective prejudices into something like an objective system of subjectivity, but I always fail. There is no set of standards that I can synthesize which explains why I like *The Mote In God's Eye* AND *I Will Fear No Evil* AND *The Left Hand of Darkness* AND Sheckley's *Options* AND *Princess of Mars*, that doesn't come down to, "They did what they set out to do and made me like it."

I think the real problem is the thing that Ted Sturgeon suggested in his marvelous story, "The Silken-Swift": *magic is not bound by human rules.* And quality in art is the purest magic.

How then shall you know if my subjective opinions have any worth for *you*? Why, bless you, the same way you always do with a reviewer: by trial and error. By *my* descriptions of the elephant called SF, you other blind men should be able to acquire a fair idea of where I'm situated in relation to it and you, and adjust your own itineraries accordingly.

There are a few people out there who claim to have eyes that you and I lack. But they are all congregated at the same end of the elephant, and they are all hip-deep in something they cannot identify . . .

Some subjective impressions, then.

There is, for instance, no way on

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God's Earth that I can react to **STILL I PERSIST IN WONDERING** other than subjectively. I am almost as personally involved in the book as if I had written it myself (I pray to God that it may someday be given to me to write one-tenth as well as this). I love and cherish it so much that if there were a way for me to climb up off this page and give you a copy I would do it, and hang around for the privilege of watching your face. I believe it is the finest collection of short stories, SF or otherwise, that will be offered to you for sale this year.

Edgar Pangborn died in February of 1976, in his sleep. At approximately the same time, I discovered his work for the first time—and fell head over heels in love. His very first science fiction story, "Angel's Egg," (published in *Galaxy* in the early 1950s) was a stunning tour de force, now inexplicably out of print. (I will be reprinting it in volume two of a forthcoming Ace anthology series, *The Best Of All Possible Worlds.*) His novel *A Mirror For Observers* won the International Fantasy Award, the same award won in the previous year by Sturgeon's *More Than Human*, and is currently available in an Avon reprint. His masterpiece, *Davy*, was narrowly edged out for the Hugo Award by Fritz Leiber's *The Wanderer* (*Davy* too is still in print, in a Ballantine paperback).

Virtually all the SF Edgar wrote after that was set in the same hypothetical (please God) future as *Davy*. That is, he took to situating *all* his stories in upstate New York and environs, at some point in time *after* the Twenty Minutes' War and subsequent Red Plague, after the utter ruin of civilization and the flooding of most of the Eastern seaboard. Together they made up a "future history" like that of Heinlein, Niven, Varley and others, save that their common premise was (almost by definition) absolutely the only science fictional thing about them. The novels *The Judgment of Eve* and *The Company of Glory* (Avon and Dell paperbacks, respectively) fit into this scheme, as do all the shorter works Edgar published over the last two decades in original anthologies by Terry Carr, George Zebrowski and Roger Elwood.

The possibility that we might indeed blow ourselves to hell haunted Edgar: again and again he painted horrific pictures of the needless waste and misery that we have it in our power to inflict on our children and grandchildren. Not that he was a doom-crier or a morbid pessimist: the people in Edgar's future (*oh*, the people he created!) know love, bravery, joy, decency, music and laughter aplenty. But they also know poverty, terror, ignorance, hate, guilt and rage, and they have never *heard* of the custom of ancestor worship.

"Still I persist in wondering," writes Jermyn Graz (the narrator of the gut-wrenching "My Brother Leopold"), "whether folly must always be our nemesis."

This book is a collection of the very best of the *Davy* cycle stories, and unlike most posthumous collections it was collected by the author. Edgar assembled and retyped it himself, and died before he could get it published. That privilege fell to me, and the only things in the book that Edgar didn't put there are my foreword explaining the circumstances of the manuscript's

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discovery, and the subtitle, "Tales of a Darkening World," which Jim Frenkel of Dell came up with and which seems to utterly belong there. (I have no financial interest whatever in the book's success—reviewers can't be *that* subjective.) It is peopled with characters so real that they refuse to die even when Edgar kills them, living on in my heart to this day. It is full to bursting with wisdom and insight, with color and life, with the special magic of a writer who was a peer of Mark Twain and John Steinbeck. It will chop you up into hamburger. I never met or corresponded with Edgar Pangborn, and I love him with all my *subjective heart.*

Those of you who already know Edgar's work need only be told that this collection includes "The Children's Crusade," "My Brother Leopold," "Harper Conan and Singer David," "The Witches of Nupal," "The Legend of Hombas," "Tiger Boy," and "The Night Wind," plus a short introduction by Edgar and a complete SF bibliography. And when you have finished it, whoever you are, you will be delighted to know that it is *not* the last Edgar Pangborn book: I've just received word from Terry Carr that Michael Kurland's Pennyfarthing Press will shortly be publishing Edgar's last novel, *Atlantean Nights' Entertainments.*

Happily, the title Edgar selected for this book turned out to be accurate.

Nor is there much chance that I can be anything like objective about Terry Carr's **BEST SCIENCE FICTION OF THE YEAR # 7.**

It contains, you see—among other things—a novella called "Stardance" which my wife Jeanne and I originally published in these pages, and which at this writing is a finalist for the Hugo Award, and I submit that you cannot get much more subjective than that.

No, I take it back. Two of the stories in this book are, at this writing, *also* finalists for that very same Best Novella Hugo: Vonda McIntyre's "Aztecs" and Michael Bishop's "The House of Compassionate Sharers" (Lord that man Carr has taste, eh?).

If that doesn't do it, Raccoona Sheldon's "The Screwfly Solution" is up against my own "Dog Day Evening" for the Short Story Hugo. And she and I tied for a Hugo *last* year (under *another of her names*)!

You see how hard it is to maintain even a pretense of objectivity in this business? Full disclosure alone is cumbersome enough. (It suddenly strikes me that SF seems to have a remarkably high percentage of critics who actually practice—successfully, I mean—the art they criticize: Lester del Rey, Algis Budrys, Samuel R. Delany, James Blish, Theodore Sturgeon, Barry Malzberg, Paul Walker and of course P. Schuyler Miller all spring to mind at once, and there are many others. We have one of the few genres in which the critics are not all frustrated artists—think of that.) (We're all, of course, objective as hell.)

Happily, however, I am not obliged to list the stories in order of preference, and so I need only say that I thoroughly enjoyed them every one. I will limit comment to stories with which I am not presently in competition (save to say that the competition is *tough*), and that leaves me much to talk about.

John Varley's "Lollipop and the Tar

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Baby," for instance, is a story remarkable for the deftness with which it builds a deadly serious yarn around a zany premise. It involves a young lady in a spaceship called *The Good Ship Lollipop*, who meets a talking black hole, and there is nothing funny about it. Interested?

Then there's Bruce McAllister's quite short—but devastating—"Victor," a look at what really happened to the teenage hero and heroine of all those abominable 1950s sigh-fie monster movies after the fade-out, after they saved the world and settled down to live happily ever after . . . in the 60s and 70s.

And there's Lee Killough's extraordinary "Tropic of Eden" (I'm a sucker for pun titles), a story of a new art form and of a new and chilling crime that will leave scars on your soul. And Lisa Tuttle's odd and haunting "The Family Monkey," about a vaguely humanoid alien who crash lands in the country and is taken in by a farm family. And a marvelous Fritz Leiber (surely that's redundant?) called "A Rite of Spring," about a romantic mathematician who falls in love with a pretty little number—literally.

In addition to all these fine stories, there is an intro by Terry in which he finally publicly explains his selection process, a list of supplementary recommended reading for 1977 which includes three other Hugo finalists; and a roundup of "The Science Fiction Year" by Charlie Brown (of *Locus* and *Isaac Asimov's SF*) which is the best you're liable to find.

And so although I *do* have a financial interest in *this* book (about a tenth-share of 50% of the royalties, split with Jeanne, which might conceivably amount to as much as a quarter of what Ben Bova paid us for the story in the first place), I cannot find it in my heart to disqualify myself from bringing it to your attention. It is one of the best of Terry's bests, which is high praise.

It is quite hard to be objective about Gardner Dozois's **THE VISIBLE MAN**.

Gardner is my good friend; if we did not live a thousand miles apart I'm sure we would be close friends. When I attended my first ever SF convention, the timid author of one count' em one professional story, which had not yet even seen print in *Analog*, Gardner was one of a handful of pros (including Jay Haldeman, Jack Dann and George Alec Effinger) who took me in, got me drunk, told me fascinating lies and useful writers' gossip, made me feel at home.

Gardner is also a phenomenally talented writer who happens to have lost more Hugo and Nebula awards than any other writer living or dead, often by the veriest flea-whisker. He is a slow, careful worker, crafting his stories with skill and inventiveness and no little genius. Sooner or later his jinx has to lift, but whether or not it does, his stories will certainly continue to be *nominated* for Hugos and Nebulas with regularity (he told me recently that he didn't get nominated for anything this year because he "wanted to give some of the other guys a chance to lose.").

So when I got my review copy of *The Visible Man*, Gardner's first story collection, I fell upon it with delight. I recognized a good number of titles on sight, remembered them as excellent, and decided that this review would be

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fun to write. Maybe Gardner could cop a Best Anthology Hugo. But of course I sat down to read the whole book through, as even a subjective reviewer must, and a funny thing happened.

I couldn't finish it.

Now, this is *purely* subjective, and when I've explained what I mean a little better, perhaps you'll agree with me entirely. I sincerely hope so. Here is what happened:

I read the first story, the title story. You remember it; it ran first here in Analog in 1975. What it does, it slices you with a series of precise razor cuts, then rams the point in and twists, and that's the end of the story. I happened to read it in a time of quiet introspection, and it flattened me. The second story, "Flash Point," what it does is lead you into a pleasant rustic rural setting, and then splash little droplets of tension that become all at once a flood of horror and evil; I got up and poured some Bushmill's neat. The third story, "Horse of Air," what *that* one does is work you over gently but insistently with a wood-rasp and a hatpin, pausing occasionally to smash a kneecap, and then *it's* over . . .

At this point, I put the book down on my lap and covered my eyes. Then I picked it up and began skimming tentatively through it, scanning stories for general tenor one at a time, with special attention to endings.

The most benign emotion I picked up was suicidal boredom, and it went way down from there. Horror after nightmare after apocalyptic vision, and damned seldom heard an encouraging word; nary a catharsis in sight.

I mean to say, I had reached a point where I refused to let Gardner make me *care* about one of his wonderfully real characters—because I knew in advance that the poor sonofabitch was going to somewhichway get cut to ribbons. And *unfairly*.

Perhaps that last is why I can tolerate a whole book full of downers by, say, Harlan Ellison. His characters generally *deserve* the screwing they get. But Gardner seems to have taken just a bit too much to heart that "Like flies to wanton boys are we to the gods; they maim us for their sport" stuff. Harlan goes for impact; Gardner, more subtly, for agony. Edgar Pangborn's book deals out its share of pain and suffering, and again to people you care about, but it somehow includes enough warmth, hope and enduring love to balance the pain.

Dammit, every single one of the stories in this book is a masterpiece of style and power, and I found it impossible to read the thing. And I'm sorry to say that I can scarcely imagine the twisted mood in which I would ever come back to it. I never realized it in reading the stories individually over the years, but taken together they delineate a view of the universe that would give Ambrose Bierce nightmares.

If that, coupled with narrative and stylistic brilliance, appeals to you, go right to it with my blessings. As recently as five or six years ago I think I could have read *The Visible Man* with enjoyment (whatever that means), but at this time I just can't.

THE WAY THE FUTURE WAS also elicits a highly subjective response, for many reasons. There's no point in trying to apply literary standards of general autobiography to the memoirs of Freder-

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ik Pohl: I have no idea whether a *non*-science-fiction reader would find them interesting or informative, although I would imagine so. I was simply having too much of a good time to think of it.

In this magazine, speaking to SF readers, I think I can safely assume that there is no need to explain at any length who Fred Pohl is. Suffice it to say that he has spread himself at great length on the subject of what it has been like to be Fred Pohl for more than fifty years; and that anyone interested in Fred or the last four decades of SF or (like me) both will find it fascinating.

The book is chockablock full of history and anecdote, explaining many things that had always puzzled me about this crazy genre, helping to bring alive people who were only names or legends to me, and in at least three different spots causing me to disrupt a room with howls of sustained laughter (as distinct from the reasonably constant chuckles, snickers and giggles). I mean, wait until right near the end, when you get to the story of the job that Fred almost quit *Galaxy* for. you'll plotz. In addition you get to find out what it was like to be: a Hugo and Nebula winning writer, a Hugo winning editor, an agent of some of the best talent in SF history who managed to lose $30,000 in the midst of a boom, a four-time loser at marriage, and a friend to everyone from Isaac Asimov to Harlan Ellison (which is quite a spread).

Oddly, there are *not* a whole lot of anecdotes about Cyril Kornbluth, which I had been kind of hoping for. Fred explains in a footnote that he feels he's already essentially covered the subject of his and Cyril's collaborative and personal relationship in other places; true, but I'd been hoping for more. Still, there are a few Cyril stories, and the one about the night he and Fred copyedited a Horace Gold story together is another one of those howlers I mentioned.

One other historical memoir of olden-times SF was published this year, but it contained so many of what seemed to me gratuitous (often posthumous) character assassinations that I will not name it here, noting only that in contrast Fred (from what little *I* know of SF history) seems to have exercised almost superhuman restraint at all times. The nosy will be slightly disappointed: those four marriages seem to fly right past, for instance. But as one of the slightly disappointed nosy, I have to admit that it's none of my goddam business. About himself, Fred is not nearly so reticent or so tactful; he displays an incredible amount of insight into his own younger self (right up to the last page), and he conveys it with a fine ironic wit.

A deeply engrossing book that will be discussed for years, and hopefully will induce more SF professionals to put their oral history down on paper, for the sake of those readers and historians who can't afford to go to SF conventions and get' em drunk, and for those fans yet undreamed, unconceived and unborn. (Isaac Asimov is said to be working on volume one of his autobiog, and I'd give a lot to see one by, say, Heinlein or Sturgeon.)

Somebody once said that the natural length of a science fiction story is the novella—about 20,000 to 45,000

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words. That allows just about enough room to sketch out a science fictional world in some depth, develop some decent characters, and take them through a story of moderate complexity. An inexplicable move to delete novella from the Hugo lists a few years ago was roundly voted down by an audience consisting at least in part of horrified SF writers, including me.

Because the Hugo is one of the few solid incentives to *write* novellas, apart from artistic satisfaction. They are quite hard to sell to the magazines, which almost universally prefer shorter stories. (Why? Go ask an editor.) You can't collect them in book form—they often run half a book or better apiece. For many years Ace Books used to publish two novellas back to back as "Ace Doubles," and most of you probably have several of them in your collection, but they were discontinued over a decade ago. (Why? Go ask whoever edited Ace then.) Since that time, novella writers who wanted to eat have had to either cut unmercifully, or pad outrageously.

Good news: Dell Books is reviving the doubles format, slightly mutated (the novellas are published sequentially, rather than upside down to each other), under the logo, "Binary Stars," a peachy title. More good news: the first of these, **BINARY STAR # 1** (for obvious reasons I can't abbreviate that) is excellent.

You don't need to be told that Fritz Leiber's old *Astounding* yarn "Destiny Times Three" is excellent; purely to whet your interest I will mention that it concerns triplicate worlds, that although written during early World War II it rather prefigured the threat of atomic war, and that according to Leiber's marvelous afterword, the story originally was "going to be my masterpiece, a four or five parter at least—a big canvas to fit a big subject," but that John Campbell made him cut it down to its present 40,000 words.

But you may need to be told about Norman Spinrad's "Riding The Torch." No one who's read *Bug Jack Barron* needs to be told that Norman is brilliant, and he has authored a number of particularly exquisite SF stories. But it cannot be said of him, as it can of Leiber, that he never uttered a bad story (he did, for instance, publish *Passing Through The Flame*, four or five hundred pages of attempted best-seller about sex, drugs and rock music, a paean to evil and despair). So I should tell you that "Riding The Torch" is one of his very best stories, at times almost unbearably good. Giving you a more vivid picture of the aesthetic experience of hanging alone in free space than any SF writer has ever done is only *one* of the miracles Norman pulls off in this piece; the transcendent profundity of the theme he has dared to tackle here seems to me to take SF to its current limits.

To the question, "What does it mean to be human?" this is one of the most striking and thoughtful answers I've ever seen.

And unlike Fritz Leiber's story, it could not possibly have worked at any other length. More Binary Stars, please.

A series of parting shots, constrained by space limitations to a too small caliber. Had I but world enough and time (and white space) . . .

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SKYFALL by Harry Harrison seemed ideally designed to be a thriller best-seller—about a huge satellite that plunges to Earth with disastrous results. After it was written and before it saw print, the Russian jobbie spattered parts of Canada with shrapnel and roentgens (not my parts, fortunately). Worse, since *then*, the secret gimmick which was going to bring Harry's satellite down—unexpected solar flare heat expanding the atmosphere into its path—has become daily news: the very thing that may have brought Skylab down by the time you read this.

But dammit, it's still a good thriller that is eminently readable and reasonably suspenseful, and you ought to find it quite satisfying . . . if Skylab has not by now happened to come down on *you*.

Harry's a pro. It's not his fault that the chilling incompetence of some of the world's great space brains became public knowledge before he could expose it.

MINDFLIGHT by Stephen Goldin is also a good readable SF adventure, as his books tend to be, this one set farther in the future and with more action. Alain Cheney is a telepathic secret agent who has reached the final stage known as "telepause," a condition apparently so unstable that telepaths who enter it are routinely killed by their superiors (who are not telepaths themselves). The strain this puts on my credibility is not helped when Cheney, escaping assassination by his own bureau, fails to ever demonstrate any symptoms which might have called for his elimination. Plot machinery shows through the fuselage here and there in other spots, too—but nothing crippling, and the adventure is well drawn. Goldin is a talented writer with a weakness for lightweight themes (at least from what I've seen), but he's a good enough storyteller to keep us turning the pages. And the boss secret agent lady whose lifework it becomes to track Cheney down is a marvelous character, engaging and almost but not *quite* likable.

Finally, SCIENCE FICTION AND FANTASY PSEUDONYMS, compiled by Barry McGhan, is an excellent reference work, indispensable to the serious collector and of more than passing interest to the "average reader" (the one with the .8 children, one breast and one testicle). There's no text, just a good intro and seventy pages of alphabetical lists of names, real names in boldface type, pseudonyms in timidface, collaboration details untangled and explained (no small task: John Russell Fearn, alone and in collaboration, used thirty-two different pseudonyms, and seventeen writers used the name "Alexander Blade"). The edition I have is revised and updated to 1976, and seems to me reasonably accurate and complete. That is, there were one or two I knew that McGhan didn't, and you may come up with a couple yourself—but there were *dozens* he knew that I didn't. This book will surely accompany me to the secondhand bookstore (for pseudonym does NOT necessarily imply a hack job), and I spent an enjoyable few hours leafing through it at random. It can be ordered from Misfit Press publisher Howard De Vore at 4705 Weddel Street, Dearborn, Michigan. ■

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Brass tacks

Dear Ben:

Charles Sheffield's "Fixed Price War" in your May issue is my nomination for the single most memorable story so far this year. It provides an attractive alternative to the "many science fiction stories (which) paint a grim picture of the future."

By the way, WHY are they burning the Oz books in Florida? I can't imagine any books more inoffensive! Could it be the lack of black characters? If so, perhaps they could rewrite them à la "The Wiz" and preserve something of Oz for future generations of kids to wonder at.

JIM GOLDFRANK
11859 St. Trinian's Court
Reston, VA 22091

Dear Mr. Bova:

Having just finished the May '78 issue of Analog I have just two words: IT'S TERRIFIC!!!!!!! That was the best issue you have put out in ages. The cover was excellent. Orson Scott Card's novelette was just fantastic. Everything was just excellent. I even managed to convince some of my friends . . . after having them read the fact article, to support fusion. I commend Rothman on his excellent presentation.

Alas in every good package there is some distressing news. I refer to Keith Laumer's letter regarding the Oz books. I realize that you will probably get many letters that say the same thing; but, I will say it anyhow.

I was brought up on the Oz books. Oh, not just the *Wizard of Oz;* but, the whole thirteen (or twelve, depending upon whom you talk to) books by Baum, the continuation of the series by his daughter, Ruth Plumly Thompson, and the several that were written by other authors. I was astounded (if you will forgive the use of the word) by the not-so-great State of Florida's decision to purge these magnificent stories from their shelves and minds of their citizens. What in #*$! could have possessed them. Who knows? Perhaps there really is a devil. At any rate, I am certain your readers would be most interested in the reasoning behind *that State's* decision. After all I seem to recall that a great majority of SF writers were influenced by Baum (in addition to a great deal of other people). . . .

KURT COOPER
158 Farrand Hall
Boulder, CO 80310

Glad you (Mr. Goldfrank and Mr. Cooper) enjoyed the May issue so much. As for the "Oz" situation in Florida, Keith Laumer tried to find out why the books were being removed from the state's libraries. The only answer he could get was, "We have our orders!" Laumer's comment: "Hitler is alive and well and living in Florida."

Dear Ben:

I have just about finished the May 1978, Analog. I am continually as-

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tounded at the high quality of SF that regularly appears in Analog. . . .

I do have a favor to ask of the fans. If any reader of Analog knows of a source of SF books or magazines printed in Japanese, please contact me. My wife is a Japanese national and can not read English, but she enjoys SF almost as much as I do.

Until I recently became involved with SF wargaming, I never realized that some of the SF stories I have been reading related to anything but SF. But now I see SF wargames or Role Playing games in a lot of the stories that I read. An example of the "Role Playing Game" type of story in this May '78, issue of Analog would be "The Nuptial Flight of Warbirds." Anyone else out there see this?

Any SF fan that would like to correspond, please feel free to write me. I will answer any letter, I will try to intelligently discuss any subject.

The only complaints I have with the SF field is the distance from my home of all conventions. I am living on my retirement from Uncle Sam's Misguided Children, USMC, and, while it is okay for my needs, it doesn't allow much for travel.

Thank you for all you have done for me and for the SF field.

CAPT. B. W. LANE

USMC Retired
4658 E. Yale Ave.
Fresno, CA 93703

If any authors Out There have extra copies of Japanese translations of their works, here's a good way to put them to use.

And Phoenix—site of the 1978 World SF Convention—isn't that far from Fresno, is it?

Dear Mr. Bova:

Regarding the letter by Mr. Scott in the May 1978 Brass Tacks, I have this to say. Not only are the writers making the future bleak because the immediate future seems to be heading that way, but they also portray it that way to help people see and avoid, hopefully, that future. Is it possible that World War III has been avoided to date because of such bleak forecasts? If they can get people to realize what might happen, the writers can steer the world away from those grim futures. There're still a lot of stories with more optimistic futures in Analog than the stories he talks about.

DAVE GRISWOLD

250 Cayuga Hall
SUCO
Oswego, NY 13126

Science fiction writers can be thought of as scouts who move ahead in time and send back reports to us about what the landscape up ahead is like. Trouble is, most people don't read science fiction, and even many that do pay no "real world" attention to the reports—good and bad!

Dear Ben:

In your April editorial, "Political Science Revisited," there is one question that is quite loaded and unfair. Jeff Rovin asks: "KMS Industries was able to produce a laser-fusion reaction after only four years of research. Government supported laboratories were unable to accomplish this feat in twenty-five years of experimentation! Why is there such a discrepancy between the effectiveness of public and private facilities?"

This question completely ignores the fact that the laser was not invented

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until 1960 and that lasers of sufficient power to produce thermonuclear reactions were not available until the late 1960s, at which time everybody with enough cash to buy a big laser started getting into the act.

The reply from the government was not very helpful in clarifying the situation. However, the question from Rovin appeared to be more interested in embarrassing the government and proving the superiority of private enterprise than in eliciting information. The fact is, that when the overall picture is taken into account, almost all thermonuclear research during the past 25 years has been government supported, whether performed in in-house establishments such as Livermore and Oak Ridge or in university laboratories such as the Princeton Plasma Physics Laboratory. The role of private enterprise has been relatively small, for obvious economic reasons.

A letter from William C. Finch, Nuclear Engineer of General Atomic Co., San Diego, takes me to task for not mentioning the Doublet III device just completed at General Atomic. It is one of the largest fusion devices now operating. It should be noted that for many years General Atomic has been the only industrial organization engaged in large-scale research on magnetic fusion devices. (With government financing, of course.)

MILT ROTHMAN

Yet the fact remains that KMS *achieved fusion reactions before anyone else did. While the Los Alamos National Laboratory (for example) was involved in negotiating a contract for delivery of a mammoth laser system,* KMS *was producing fast neutrons from laser-triggered fusion. Can it be that an organization that is dedicated to producing profits, rather than PhD's, moves faster and more efficiently than Government-owned university-staffed laboratories?*

Dear Mr. Bova:

My copy of Analog arrived in the mail this morning, and I haven't finished it yet, but couldn't wait. "Backstage Lensman" is wonderful; a ravening, tightly-held pencil of pure farce. Randall Garrett should win a Hugo for this one, and one of these days, I hope I'll find out what happens when Surgeon-General Macy introduces Ginnison to a certain red-headed nurse with good bones. I haven't laughed so hard or so long in many a long year; I suspect that the essence of Doc Smith, whatever form of flesh he may presently be energizing, is chuckling, too.

One small carping complaint: how come your editorial didn't mention George Pal's "Destination Moon?" It's dated, sure, but it was a technically accurate and marvelously filmed picture at a time when my father was still convinced that the man in the moon was and would always be a collection of seas and craters. . . .

Congratulations to Garrett for writing another chapter in the history of Gimble Ginnison, and to you for printing it.

ANTHONY K. VAN RIPER
11 Meadowbrook Road
Wellesley, MA 02181

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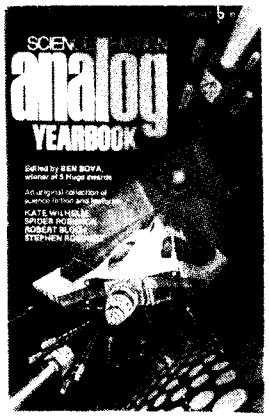

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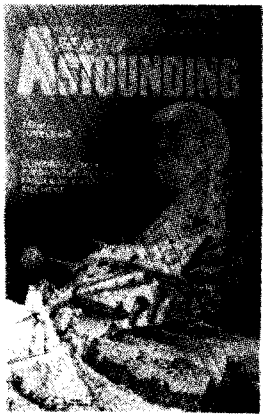

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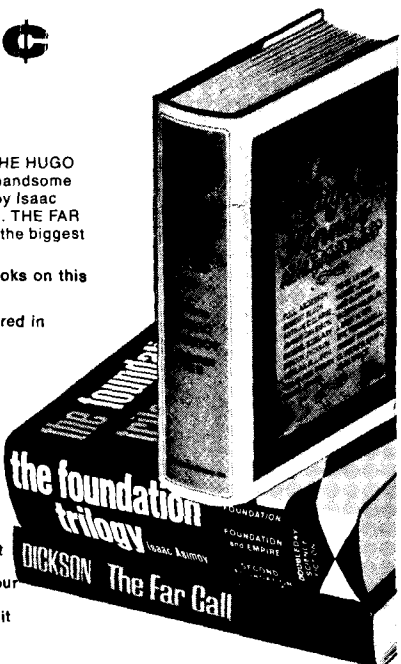

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